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VIII.—MARINE ALGAE FROM THE CHATHAM ISLANDS.

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The distribution of marine algae is a subject which has of late received some attention from botanists, but owing to insufficient data our knowledge is, up to the present, rather imperfect. The record of accurate determinations from any little known region may therefore be of value as providing a basis for further study.

Amongst the algae recently received at the Herbarium is an interesting collection from the Chatham Islands forwarded by Miss H. E. Maltby. These islands appear to possess a luxuriant marine vegetation. Miss Maltby notes the profusion of weeds on the shore; and Mr. R. M. Laing, who for many years has worked at the New Zealand marine flora, observes in a letter: "There are many novelties to be obtained here; in fact I have seen a good many undescribed species from the locality, which seems to be rich in marine algae."

The literature of the Chatham Islands algae is scanty. Agardh published two short lists, and Reinbold includes the Islands in his "Ergebnisse einer Reise nach dem Pacific. Meeresalgen." Laing also has obtained some records.

When the general character of the specimens received is considered, their marked difference from those of the Northern hemisphere is at once apparent. As in the case of Phanerogams, when one looks over any of the lists of algae from the Southern hemisphere one cannot fail to be struck with the fact that if we exclude a few cosmopolitan forms none of the species given occur in Europe or N. America. New Zealand appears more strikingly diverse in this respect even than Australia; and it is to the flora of this country that the Chatham Islands algal flora bears most resemblance.

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Subjoined is a list of those algae in Miss Maltby's collection which it has been possible satisfactorily to determine :—

CHLOROPHYCEAE.

Enteromorpha acanthophora, *Kütz.*, Spec. Alg., p. 479 ; De Toni Syll. Alg. vol. i., p. 135.

Lyall's Otago specimens determined by Harvey as *E. clathrata* var. *ramulosa*, Harv., have been frequently quoted as *E. acanthophora*, Kütz. This is not correct. An examination of Lyall's specimens in the Kew Herbarium shows that the plant is in reality what it was originally named, or as it is known to-day *E. ramulosa*, Hook.

DISTRIBUTION. New Zealand.

Caulerpa Brownii, *Endl.*, Gen. Pl. Suppl. vol. iii., p. 16 ; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 260. *C. furcifolia*, Harv. in Hook. l. c. p. 260. Concerning this species Weber van Bosse (Mon. p. 307) remarks :—"J'ai été frappée de voir que, parmi les échantillons de la Nouvelle Zélande, il y en avait tant, chez lesquels le nombre de ramules avait diminué. J'ai observé également un amoindrissement du nombre de ramules chez des échantillons du *C. hypnoides* venant de la même localité, et je me suis demandée si ceci pouvait être à cause des courants d' eau froide qui, venant du Pôle, se mêlent à l' Océan Pacifique et en abaissent la température."

The Chatham Islands specimens do not show the above-mentioned peculiarity. The depth below the surface of the water is also a factor of importance in the solution of such problems, and the recent work of Svedelius (Ecol. and Syst. Studies of the Ceylon Species of *Caulerpa*, Ceylon Marine Biological Reports No 4, 1906) tends to show that in the case of *C. clavifera* diminished light causes distinct elongation of the axis.

DISTRIBUTION. S. Australia, Tasmania, New Zealand.

PHOEOPHYCEAE.

Carpophyllum Phyllanthus, *Hook. et Harv.* in Lond. Journ. Bot. vol. iv., p. 525 ; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 212 ; Laing Revised List, in Trans. New Zeal. Inst. vol. xxxii., 1899, p. 68, with figures.

DISTRIBUTION. New Zealand.

Carpophyllum plumosum, *J. Ag.*, De Alg. Nov. Zel. p. 11. *Sargassum plumosum*, A. Rich. ; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 212 ; Laing Revised List, in Trans. New Zeal. Inst., vol. xxxii., 1899, p. 68, with figures.

DISTRIBUTION. New Zealand.

Cystophora retroflexa, *J. Ag.*, Sp. Alg. vol. i., p. 242 ; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 214.

DISTRIBUTION. Australia, Tasmania, New Zealand.

Hormosira Banksii, *Decne.* in Ann. Sci. Nat. sér. ii. vol. xvii., p. 331 ; De Toni Syll. Alg. vol. iii., p. 187.

DISTRIBUTION. Australia, Tasmania, New Zealand.

Xiphophora chondrophylla, *De Toni*, Syll. Alg., vol. iii., p. 213; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 215.

DISTRIBUTION. Australia, New Zealand.

Zonaria Turneri, *J. Ag.*, Chat. öar. alg., p. 438. *Z. interrupta*, Harv. Phyc. Austral. tab. 190.

DISTRIBUTION. Australia, Tasmania, New Zealand.

Scytothamnus australis, *Hook. et Harv.* in Lond. Journ. Bot. vol. iv., p. 531; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 219.

DISTRIBUTION. New Zealand, Cape Horn, S. Australia?

Stypocaulon funiculare, *Kütz.*, Sp. p. 467; Reinke Vergl. Anat. Morph. Sphacelar. p. 22, t. 8. *Sphacelaria funicularis*, Mont.; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 221.

S. paniculatum, Kütz., was frequently confused by older writers with the present species. Reinke, l. c., has fully gone into the question and has pointed out the inaccuracies in previous descriptions. *S. paniculatum* may be distinguished from *S. funiculare* by the characteristic fertile frond with sori consisting of a multicellular placenta, and numerous sessile unilocular sporangia.

DISTRIBUTION. Australia, New Zealand, Cape Horn.

FLORIDEAE.

Gigartina angulata, *J. Ag.*, Epicr. p. 197. *G. stiriata*, Ag.; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 252, non aliorum. *Iridaea stiriata*, Hook. et Harv. in Lond. Journ. Bot. vol. iv., p. 547.

G. stiriata, Ag. in Harvey Gibson's New Zealand List has been pointed out by Laing to be *G. angulata*. Thus the former plant is still only known from the Cape; it is distinct from *G. angulata* as explained by J. Agardh, Epicr. p. 197.

DISTRIBUTION. New Zealand.

Stenogramme interrupta, *Mont.* in Duchartre Rev. Bot. 1846, p. 483; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 249.

This interesting alga, though not general in its distribution, has been reported from various quarters of the world. It is locally abundant, but sporadic, and appears to be most frequent in certain localities of New Zealand. It is, however, also known from Australia, Florida, California and Japan. In Europe it is very rare, but has been collected on the coast of Devon, in the North of France, and in Spain.

The Chatham Islands specimens, of which both cystocarpic and tetrasporic plants were received, are somewhat more robust than those of Europe.

DISTRIBUTION. Vide supra.

Callophyllis Hombroniana, *Kütz.*; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 251.

DISTRIBUTION. New Zealand.

Callocolax neglectus, *Schmitz* ex Batters in Ann. Bot. vol. ix., 1895, p. 316.

On *Callophyllis Hombroniana*, Kütz.

New Zealand specimens were recorded by Laing (Trans. New Zeal. Inst. vol. xxxvii., 1904, p. 282.)

DISTRIBUTION. On *C. laciniata*, Kütz. British Isles.
On *C. Hombroniana*, Kütz. New Zealand.

Rhodophyllis chathamensis, *Cotton*, sp. nov.

A *R. membranacea*, Harv. tetrasporangiis in sorum collectis distincta.

Species submembranacea, mediocris magnitudinis, flabellatim vel irregulariter ramosa; *frons* duobus distinctis cellularum stratis contexta, cellulis interioribus majoribus per duas series frondis plano parallelas dispositis, cellulis corticalibus minutis aspectu rosulato-areolato a superficie desunt; *rami* 5 mm. lati, subdichotomi vel flabellati, margine integro, segmentis terminalibus augustioribus obtusis; *venae* nullae; *cystocarpia* incognita; *tetrasporangia* secus mediam paginam incrassatam fere in soro disposita, 40 × 20 μ. Color brunneo-ruber.

In form this species often resembles *R. membranacea*, Harv. It differs from it however both in the structure of the frond and the position of the tetraspores. The cortex is distinct, and is composed of a uniform layer of minute cells, which entirely covers the inner tissue. A true rosulato-areolate arrangement is not present, though the outline of the larger cells beneath is very obvious. *R. membranacea*, Harv., differs in the punctate thallus, and incomplete cortex. In the arrangement of the tetraspores the present species approaches the Australian *R. Brookeana*, J. Ag., to which it is perhaps most nearly allied; it differs from it in the structure of the frond.

Rhodophyllis membranacea, *Harv.* in Hook. Fl. Nov. Zel., vol. ii. p. 247, t. 117. *Halymenia membranacea*, Hook. et Harv. in Lond. Journ. Bot. vol. iii., 1844, p. 448; non *R. membranacea* Harv., Alg. Austral. exsicc. No. 372, 373.

Originally described by Harvey from Tasmania in 1844, and 11 years later figured by him in Fl. New Zeal. Recently this alga has been almost completely lost sight of. For the present it will suffice to say that an examination of the original specimen in Herb. Kew shows the references quoted above to be correct. It is hoped to publish a full account of the New Zealand species of *Rhodophyllis* shortly.

DISTRIBUTION. S. Australia, Tasmania, New Zealand.

Sarcodia Montagneana, *J. Ag.*, Spec. vol. ii., p. 623; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 242. *Rhodymenia Montagneana*, Harv. Ner. Austral. tab. 48.

DISTRIBUTION. New Zealand.

Apophlaea Lyallii, *Harv.* in Hook. Fl. Nov. Zel., vol. ii., p. 244, tab. 116 a.

DISTRIBUTION. New Zealand.

Champia Novae-Zelandiae, *Harv.* in Hook. Fl. Nov. Zel., vol. ii., p. 235; cf. Laing. in Trans. New Zeal. Inst. vol. xxxiv., 1901, p. 338.

DISTRIBUTION. New Zealand.

Chylocladia umbellata, *Harv.* in Hook. Fl. Nov. Zel., vol. ii., p. 253, tab. 119 c.; De Toni Syll. Alg. vol. iv., p. 577.

DISTRIBUTION. New Zealand.

Plocamium abnorme, *Hook. et Harv.* in Lond. Journ. Bot. vol. iv., p. 543; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 246.

DISTRIBUTION. New Zealand.

Plocamium brachiocarpum, *Kütz.*, Sp. p. 885; De Toni Syll. Alg. vol. iv., p. 592.

DISTRIBUTION. New Zealand.

Nitophyllum palmatum, *Harv.* in Hook. Fl. Nov. Zel., vol. ii., p. 240, (var. excl.); De Toni Syll. Alg. vol. iv., p. 659.

DISTRIBUTION. New Zealand.

Laurencia obtusa, *Lam.*, Ess., p. 42; De Toni Syll. Alg. vol. iv., p. 791. The specimens though differing slightly from those of Europe are not sufficiently dissimilar to justify their being regarded as a distinct species.

DISTRIBUTION. In almost all tropical and temperate seas.

Laurencia botryoides, *Gaill.*, Résumé p. 15; Harv. Phyc. Austral. tab. 182.

L. thyrsifera, J. Ag., which approaches this species very closely, differs in having opposite branches. Transitional forms are not wanting, and it is doubtful if the two plants are distinct.

DISTRIBUTION. S. Australia.

Laurencia heteroclada, *Harv.* in Trans. Irish Acad. vol. xxii. p. 544; Phyc. Austral. tab. 148.

DISTRIBUTION. S. and W. Australia, New Zealand.

Laurencia gracilis, *Harv.*, Ner. Austral. p. 84. *L. filiformis*, Hook. et Harv. in Lond. Journ. Bot. vol. vii., p. 444, (non alibi).

DISTRIBUTION. New Zealand.

Cladhymenia oblongifolia, *Hook. et Harv.* in Lond. Journ. Bot. vol. iv., p. 540; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 235, tab. 113.

DISTRIBUTION. New Zealand.

Polysiphonia Lyallii, *Hook. et Harv.* in Hook. Fl. Antarct. vol i., p. 182, tab. 74; Harv. Ner. Austral. p. 41.

DISTBIBUTION. New Zealand.

Polysiphonia aterrima, *Hook. et Harv.* in Lond. Journ. Bot. vol. iv., p. 536; Harv. Ner. Austral. p. 52, non J. Ag.

DISTRIBUTION. New Zealand.

Euzoniella ovalifolia, *Falkenb.*, Die Rhodomelaceen p. 367. *Polyzonia ovalifolia*, Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 226, tab. 112 b.

On *Cheilosporium Wardii*, De Toni.

DISTRIBUTION. New Zealand.

Metamorphe Colensoi, *Falkenb.* in Engl. & Prantl Nat. Pflanzenf. p. 445. *Polysiphonia Colensoi*, Harv. in Hook. Fl. Nov. Zel., vol. ii., tab. 112 c. (parum characteristica).

On *Cystophora retroflexa*, Ag.

DISTRIBUTION. New Zealand.

Dipterosiphonia dendritica, *Falkenb.*, Die Rhodomelaceen p. 324. *Polysiphonia dendritica*, C. Ag., non Hook. et Harv.

On *Cheilosporium Wardii*, De Toni.

DISTRIBUTION. Australia, New Zealand, Brazil.

Lenormandia Chauvinii, *Harv.* in J. Ag. Spec. vol. iv., p. 1104; Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 222 (excl. var. *angustifolia*).

DISTRIBUTION. Australia, New Zealand.

Bostrychia mixta, *Hook. et Harv.* in Lond. Journ. Bot. vol. iv. p. 270 et p. 539; Harv. Ner. Austral. p. 70; Phyc. Austral. tab. 176 a. Hook. Fl. Nov. Zel., vol. ii., p. 225.

DISTRIBUTION. Australia, New Zealand, S. Africa.

Griffithsia Sonderiana, *J. Ag.*, Epicr. p. 62; Laing, in Trans. New Zeal. Inst. vol. xxxvii., 1904, p. 389. *Callithamnion Griffithsiae*, Harv. Alg. Austral. Exsicc. No. 535. *Griffithsia setacea*, Harv. quoad spec. ex Austral. et Nov. Zel. *Monospora? griffithsioides*, De Toni Syll. Alg. vol. iv., p. 1302.

DISTRIBUTION. S. Australia, Tasmania, New Zealand.

Ceramium apiculatum, *J. Ag.*, De Alg. Nov. Zel. p. 14. *C. cancellatum*, Harv. in Hook. Fl. Nov. Zel., vol. ii., p. 256 (non alibi).

DISTRIBUTION. New Zealand.

Lithothamnion cystocarpideum, *Fosl.*, Alg. Notiser, vol. ii. p. 7. (Kgl. Nor. Vid. Selsk. Skr. 1906 No. 2.) sp. nov.

As the original description of this species is published in the Norwegian language a Latin translation is given below.

L. conchato, Setch. et Fosl. affine a quo conceptaculis sporangiorum recedit.

Frons suborbiculata, paulum convexa aut concava, 0·4–1 cm. diam., 0·2–0·5 mm. crassa, plusminusve undulata, saepe irregulariter incisa. *Conceptacula sporangiorum* convexa aut hemispherica, 300–500 μ diam., centro valde depressa, tegmine canalibus 12–20 intersecto, *sporangia* zonatim 4 divisa, 160–240 $\times$ 50–80 μ; *conceptacula cystocarpiorum* subconica, 300–600 μ diam.

HAB. in frondibus Cheilosporii.

This species was sent to Mr. Foslie the well-known authority on *Lithothamnia*. He has described it as new, and has furnished the following notes.

"In habit and also partly in structure this species is most nearly "related to *L. conchatum*, Setch. and Fosl. from the Pacific coast "of North America. The conceptacles of sporangia however "approach those of *L. haptericolum*, from New Zealand, and "*L. nitidum*, Fosl. from Japan. If only a cursory examination be "made, the conceptacles of sporangia may easily be confounded "with those of the cystocarps."

Lithothamnion Patena, *Heydr.*, Lith. Mus. Paris, 1901, p. 542. *Melobesia Patena*, Harv. Ner. Austral. p. 111, tab. 40.

Foslie though previously regarding this plant as a form of *L. lichenoides*, Heydr. states in a letter that he now considers it "a separate species as remarked in 'Antarctic and Sub-Antarctic Corallinae' now in the press."

DISTRIBUTION. New Zealand.

Cheilosporium Wardii, *De Toni*, Syll. Alg. vol. iv., p. 1828. *Amphiroa Wardii*, Harv., Ner. Austral. p. 99, tab. 38.

DISTRIBUTION. Australia.

Corallina armata, *Harv.*, Ner. Austral. p. 103, tab. 40, fig. 1–7.

DISTRIBUTION. New Zealand.

Corallina Cuvieri, *Lamour.*, Pol. flex. p. 286; Harv. Ner. Austral. p. 106. *Jania granifera*, Decne. *J. subulata*, Sow.

DISTRIBUTION. S. Australia, New Zealand.

IX.—THE WESTERN CATALPA.

(*Catalpa cordifolia*, Jaume [*C. speciosa*, Warder.])

W. J. BEAN.

A number of enquiries have recently been addressed to Kew as to the likelihood of this tree proving of value in the British Isles for the production of timber. Some of these enquiries probably had their origin in statements that have appeared in the daily press describing the wonderfully durable qualities of the timber of this tree. But one correspondent says: "I was told by the chief "engineer of 3,000 miles of railroad in the Southern States of "U.S.A. that the railway companies were now planting large areas "to supply them with sleepers, and that he had known this timber "to stand 30 years in situations where 'White Oak' rotted in 6 "or 7 years."

The wood of *Catalpa cordifolia* undoubtedly possesses a remarkable quality of resisting decay in moist places or in contact with the soil. Numerous instances of this are recorded by American authorities. In Sargent's *Silva of North America*, vol. vi., p. 90, the following statement occurs: "The trunks of the "Catalpa trees killed by the sinking and subsequent submersion of "a large tract of land near New Madrid, Missouri, which followed "the earthquake of August, 1811, were standing and perfectly sound

"67 years later, although all their companions in the forest had "disappeared long before. Undecayed fence-posts believed to "have been continuously in the ground for more than half a century "demonstrate, too, the remarkable duration of the wood of this "Catalpa." Mr. B. Landreth, president of the Pennsylvania Forestry Association, stated in 1888 that he had in his possession a piece of gate-post which had stood in place 100 years and was still in a perfect state of preservation (*Garden and Forest*, 1888, p. 500).

Catalpa cordifolia inhabits moist fertile situations in the States of Illinois, Indiana, Kentucky, Tennessee, Missouri and Arkansas. Under forest conditions it grows 100 feet, occasionally 120 feet, high, but in open situations where the branches have room for lateral development, it attains to only half those heights. The finest trunks are 4½ feet in diameter. The blade of the leaf is ovate with a long, tapering apex and frequently more than one foot long by 6 to 8 inches broad; the petiole is about half the length of the blade. It is a very handsome tree in regard to both its foliage and its flowers, the latter being 2½ inches across with a white, campanulate corolla blotched with yellow and spotted with purple. The oldest specimens in Kew were raised in 1880 from seed sent by Professor Sargent, and they have flowered annually for several years past.

The species may easily be confounded with *Catalpa bignoniaefolia*, a well-known ornamental tree that has been cultivated in English gardens since early in the eighteenth century. Besides differing, however, from *C. cordifolia* in its slower growth and smaller stature, it can also be distinguished by its shorter, less tapering leaves, its fewer-flowered panicles, its smaller, more profusely spotted flowers, and the thinner walls of the fruit. It is of little value as a timber tree compared with *C. cordifolia* and if large plantings of the latter were contemplated, care should be taken to obtain the seed true.

The wood of *C. cordifolia* is light in weight and colour, and although coarse-grained and neither hard nor strong, it takes a fine polish and can be used for furniture and cabinet work. Millions of trees have been planted by railway companies and others in the United States, especially in the west. It is highly valued there for making railway sleepers on account of its great durability when in contact with the earth. In this respect it is superior to 'White Oak,' but the wood does not afford so firm and sound a grip for the bolts holding down the rail to the sleeper as the 'White Oak' does. It is also very useful for gate-posts, fencing, telegraph poles, &c.

And now the question arises as to whether this tree is likely to be of any value for forest planting in the British Isles. We may say at once that the replies made by Kew to enquirers on this matter have been to the effect that it is very improbable that this Catalpa can be grown for profit in this country, and to dissuade them from devoting land and capital to its cultivation on any other than an experimental scale. It is certainly quite hardy in the South of England; at Kew it has withstood the winters of the last 25 years quite uninjured. But it does not grow fast. The trees at Kew, however, do not give a fair idea of its capabilities

under forest conditions. They have been transplanted several times, are situated quite in the open, and the soil is not good. The localities in the British Isles where it would be most likely to succeed are the south and west of England and perhaps the north of Ireland. Although a mild climate is no doubt favourable to its quick growth, it is not that alone that will make its cultivation a success. It has experienced 32° Fahr. of frost at Kew without injury and is perfectly hardy in the severe New England climate. Abundant sunshine with a moist fertile soil are more important desiderata, and where those are available more profitable crops than this Catalpa can be secured. Certainly it will not be a success—as some enquirers had been led to hope—on barren uplands and places where ordinary crops could not be grown.

X.—DIAGNOSES AFRICANAE: XIX.

881. **Hibiscus Allenii**, *Sprague et Hutchinson* [Malvaceae—Hibisceae]; ab affini *H. micrantho*, Linn. f., foliis profunde trilobatis et seminibus pubescentibus tantum nec villosis recedit.

Herba erecta, 30–50 cm. alta, simplex vel ramis lateralibus rectis angulo acuto divergentibus munita, caulibus et petiolis et pedunculis pilis stellatis flavescentibus patule hirsutis. *Caulis* teres, basi 1·5–3 mm. diametro, internodiis 3–6 cm. longis. *Stipulae* filiformes, 3–5 mm. longae, pilis simplicibus hirsutae. *Folia* saltem 3-lobata, irregulariter serrata, lobis oblongis vel oblongo-lanceolatis 2–5·5 cm. longis 0·8–2 cm. latis rarius (in foliis basalibus ramorum) elliptico-oblongis 1–2 cm. longis 0·8–1·2 cm. latis, superiora et media profunde 3-lobata, inferiora minus profunde 3–5-lobata, lobo intermedio interdum utrinque lobulo circa medium orto munito, lamina utrinque strigosa supra pilis simplicibus subtus pilis 3–4-radiatis, venis utrinque subtus magis prominulis; petioli 1–2·3 cm. longi. *Flores* in axillis solitarii, pedunculis 2·5–3 cm. longis circ. 5 mm. infra apicem articulatis sub fructu usque ad 4 cm. longis. *Bracteolae* 8, rarius 9, lineares, obtusae, 2·5–3·75 mm. longae, circ. 0·5 mm. latae, extra et marginibus pilis biradiatis et simplicibus hirsutae. *Calyx* apice extra et margine pilis simplicibus ceterum extra pilis 2-radiatis hirsutus, intus glaber; tubus 2 mm. longus; lobi lanceolati, subacuti, 5–6·5 mm. longi, 1·75–2·5 mm. lati. *Petala* carminea, oblique elliptica, rotundata, 12 mm. longa, 6–6·5 mm. lata, basi 2 mm. tubo stamineo adnata, intus glabra, extra parte eorum in alabastro visa stellato-pilosa. *Stamina* 25; columna tota 11–12 mm. longa, staminum verticillos tres gerens, ultra verticillum superiorem 2 mm. producta, dentibus 5 triangularibus vix 0·5 mm. longis; verticillus inferior 1 mm. supra petala insertus, e staminibus 5 compositus, filamentellis simplicibus 1·5–2 mm. longis; verticilli medius et superior e staminibus 10 compositi, filamentellis e basi bifurcatis quam iis verticilli inferioris brevioribus; verticillus medius 3·5–4·5 mm. supra inferiorem, superior 2·5 mm. supra verticillum medium situs. *Ovarium* globosum, 2·5 mm. diametro, minute dense appresse albo-pubescens, loculis 3–4 ovulatis; styli glabri pars

communis 8–8·5 mm. longa, ramis circ. 5 mm. longis e tubo tubo stamineo 4 mm. exsertis, stigmatibus capitatis dense penicillatis. *Capsula* circ. 8 mm. diametro, puberula. *Semina* minute appresse pubescentia.

RHODESIA. Near Victoria Falls, in the damp vlei, *Allen*, 103, 113.

Evidently allied to *H. Dinteri*, Hochr., which differs, however (from the description), in the following points :—" lamina usque ad basin tripartita ; pedunculis ca. medio articulatis ; involucri bracteae ca. 6, subulatae."

882. **Hibiscus Hildebrandtii**, *Sprague et Hutchinson* [Malvaceae—Hibisceae] ; habitus fere *H. crassinervii*, Hochst., a quo indumento bracteolarum et calycis, calycis lobis latioribus plurinerviis, columna staminea diversa abhorret.

Suffrutex erectus, strictus, ramulis sub angulo acuto divergentibus, ramis stipulis petiolis et laminis infra aspere stellato-tomentellis, pilis pluriradiatis. *Rami* teretes, 1·5–2·5 mm. diametro, internodiis 1·5–3·5 cm. longis. *Stipulae* subulatae, 4–5 mm. longae. *Folia* ovato-elliptica vel late elliptica, apice rotundata, 1·5–3·7 cm. longa, 1–3·2 cm. lata, margine denticulata, basi 5–7 nervia, utrinque pilis stellatis aspera, supra pubescentia, subtus tomentella, venis supra inconspicuis subtus prominentibus ; petioli 3–12 mm. longi. *Flores* in axillis solitarii, pedunculis 2–3 cm. longis 5–8 mm. infra apicem articulatis. *Bracteolae* 8, rarius 7 vel 9, subulatae, 3·5–6·5 mm. longae, basi 1–1·25 mm. latae, extra pilis stellatis antrorsis intus et margine pilis simplicibus indutae. *Calyx* extra pilis 2–5-radiatis antrorsis aspere tomentellus, radiis sub angulo parvo divergentibus ; tubus 2–2·5 mm. longus, intus glaber ; lobi lanceolati vel ovati et acuminati, 5–8 mm. longi, 3–3·5 mm. lati, subacuti, 5–7-nervii, intus superne sparsiuscule appresse pubescentes. *Petala* rosea vel coccinea (*Hildebrandt*), anguste obovata, 1·5–2 cm. longa, circ. 7 mm. lata, basi 3 mm. tubo stamineo adnata, intus glabra, extra parte eorum in alabastro visa stellato-pilosa. *Stamina* in forma typica 50 ; columna tota circ. 1·7 cm. longa, staminum verticillos quinque gerens, ultra verticillum supremum circ. 2 mm. producta, lobis 5 oblongis vel oblongo-lanceolatis 1–1·5 mm. longis obtusiusculis ; verticilli omnes e staminibus 10 compositi, filamentellis bifurcatis ; verticillus infimus circ. 6 mm. supra petala insertus ; inferiores 2–2·5 mm., superiores 1–1·5 mm. distantes. *Ovarium* globosum vel subglobosum, circ. 3 mm. diametro, minute dense appresse albo-pubescens, loculis 4–6-ovulatis ; styli glabri pars communis 1·4 cm. longa, ramis 4–5 mm. longis exsertis, stigmatibus capitatis dense penicillatis circ. 0·75 mm. diametro. *Capsula* ellipsoidea, 1 cm. longa, puberula. *Semina* rufo-villosa, villis circ. 5 mm. longis. *Embryo* 2·5-3 mm. longus.

SOMALILAND. Adda Gallah, *James and Thrupp* ; without precise locality, *Lort-Phillips*.

BRITISH EAST AFRICA. Mombasa, *Hildebrandt*, 1926 ; *Scott Elliot*, 6121 ; *Wakefield*. Pemba River, *Kässner*, 350. Ribe, *Wakefield*. Makini, 120 m. alt., *Kässner*, 426. North of Mombasa, on a journey to Lamu and Witu, *Whyte*. Duruma District ; Tkhamtei, *Hildebrandt*, 2327.

German East Africa. Umba Valley, *C. S. Smith*; Tanga, *Heinsen*, 140.

The description of the staminal tube was taken from a fully developed flower (*Hildebrandt*, 1926), and represents the normal condition. Occasionally a few (3 in two instances) additional *solitary* stamens are found below the lowest normal whorl; or the latter may be absent and the stamens are thus reduced to four whorls (*Scott Elliot*, 6121.)

The two lowest whorls may consist of solitary stamens instead of pairs (*Lort-Phillips*); or they may be represented by a single solitary stamen (*James and Thrupp*), the number of stamens being thus reduced to 31.

883. **Hibiscus shirensis**, *Sprague et Hutchinson* [Malvaceae — Hibisceae]; ab. *H. gossypino*, Thunb., quocum confusus, indumento, floribus minoribus, styli ramis glabris facillime distinguitur.

Frutex erectus, 1–2 m. altus, caule terete inferne circ. 4 mm. diametro pilis pluriradiatis magnis brunneis sparse, et aliis parvis albidis dense, aspere pubescente, superne tomentello subcorymbose ramoso, ramulis sub angulo acuto ortis ascendentibus, internodiis 2·5–10 cm. longis. *Stipulae* filiformes, 5–8 mm. longae. *Folia* caulis ambitu deltoideo-ovata, leviter trilobata, apice acuta, basi subcordata, 6–8 cm. longa, 4–6 cm. lata, crenata, basi sub-7-nervia, supra breviter stellato-pubescentia, subtus stellato-tomentella, venis supra inconspicuis subtus prominentibus; folia ramulorum ovata, 2–3·5 cm. longa, 1·5–3 cm. lata; subacute crenata, majora eorum interdum leviter trilobata; petioli 3–6 cm. longi, stellato-pubescentes, juniores tomentelli. *Inflorescentia* laxe paniculata, ramulis circ. 3-floris, inferioribus solitariis 10–15 cm. longis, superioribus ex eadem axilla ac pedunculo unifloro jam fructifero ortis. *Pedunculi* florum solitarium tandem 2·5–5·8 cm. longi, 4–13 mm. infra apicem articulati. *Bracteolae* 7, rarius 6 vel 8, linearilanceolatae, subacutae, 4–6 mm. longae, 1–1·25 mm. latae, utrinque pilis albidis 2-pauci-radiatis antrorsis tomentellae, extra pilis paucis majoribus brunneis 2-radiatis inferne adjectis. *Calyx* extra pilis albidis stellato-tomentellus et aliis majoribus brunneis 2–4 radiatis hirsutus; tubus 1·5–1·75 mm. longus; lobi lanceolati, acuti vel subacuti, 7–9 mm. longi, 2–3 mm. lati, intus superne breviter appresse albo-pubescens vel tomentellus, superne 3-nervius, inferne 5-nervius. *Petala* carminea, obovato-oblonga, 1·5–2 cm. longa, 8–12 mm. lata, basi 2–2·5 mm. tubo stamineo adnata. *Stamina* 50–80, plerumque geminata, uno alterove hinc inde solitario, inferiora paullo supra petala inserta, filamentellis 3–4 mm. longis; columna tota circ. 1 cm. longa, ultra filamentella suprema 1–1·5 mm. producta, dentibus oblongis vel subtriangularibus circ. 0·5 mm. longis. *Ovarium* globosum, 3 mm. diametro, minute albo-pubescens, loculis 6–8-ovulatis; styli glabri pars communis 5–6·5 mm. longa, ramis 4–6 mm. longis, stigmatibus capitatis dense penicillatis. *Capsula* circ. 1 cm. longa, sparse puberula. *Semina* dense villosa, villis circ. 5 mm. longis. — *Hibiscus gossypinus*, Mast. in Oliv. Fl. Trop. Afr. vol. i. p. 205, *partim*, non Thunb.

Nyasaland. Manganja Hills; entrance of Bangwe Pass, 900 m., *Meller*. Shire Highlands, *Buchanan*, 94; banks of Likangala River, *Buchanan*, 385. Zomba, *Purves*, 140.

The partial filaments are crowded on the staminal column and their arrangement is in consequence difficult to determine, but it is probably spiral.

The corolla of *Hibiscus gossypinus*, Thunb., appears to be *white*, at all events in the Tropical African specimens : see the labels of *Meller*, Manganja Hills, and *Johnston*, 93, Kilimanjaro, both in the Kew Herbarium ; also the note by Grant in Trans. Linn. Soc., vol. xxix., p. 37, referring to *Grant*, 162.

The pink-flowered " variety " of *H. gossypinus*, described on the same page, is a distinct species, closely allied to *H. Hildebrandtii ;* and Masters' description in Fl. Trop. Afr., vol. i., p. 205, of the corolla of *H. gossypinus* as pink is due to confusion with *H. shirensis* and other species.

None of the South African specimens of *H. gossypinus* have any indication of the colour of the flowers on the labels, but Harvey in Harv. and Sond. Fl. cap., vol. i., p. 175 describes the flowers as yellow. The colour is probably taken from the description of *H. fuscus*, Garcke, which Harvey reduces to *H. gossypinus*.

Hochreutiner's reduction of *H. gossypinus* to *H. ferrugineus*, Cav., in Ann. Conserv. et Jard. Bot. Genève, 1900, p. 84, is inadmissible. The style-branches are shown as much exserted and glabrous in Cavanilles's figure (Diss. t. 60, f. 1), characters quite inconsistent with *H. gossypinus*.

The specimen of *Scott Elliot*, 2670, Madagascar, at Kew, on the other hand, agrees well with Cavanilles's figure, so that there can be little doubt that *H. ferrugineus* is a well-defined species endemic in Madagascar.—T. A. S.

884. **Cienfuegosia heteroclada**, *Sprague* [Malvaceae—Hibisceae] ; ab omnibus speciebus hactenus descriptis cymis e rhizomate ortis differt.

Suffrutex rhizomate ascendente vel suberecto lignoso apice incrassato caules foliatos et cymas aphyllas gerente. *Caules* 2 coëtanei vel 1, 7–22 cm. longi, ± anfractuosi, pentagoni, angulis costatis, pallidi, glandulis nigro-purpureis punctati, ceterum glabri. *Stipulae* lineari-subulatae vel subulatae, 4–8 mm. longae, valde unicostatae, glanduloso-punctatae. *Folia* simplicia ; laminae obovatae vel anguste obovatae, aliae integrae, aliae apice tridentatae, unica bidentata, dentibus terminali et laterali, apice vel dentibus acute breviter acuminatae vel apiculatae, basi cuneatae, 9–13 cm. longae, 4–6·5 cm. latae, 5-veniae, tenuiter coriaceae, glanduloso-punctatae, ceterum glabrae, utrinque manifeste crebre reticulatae, venis primariis supra prominulis subtus prominentibus ; petioli 2–6 mm. longi, supra late excavati. *Cymae* plures e basi caulis vel ex apice rhizomatis ortae, 3–7-florae ; rhachis 1–2 cm. longa, costata, pallida, purpureo-tincta, ut bracteae pedicelli bracteolae calycesque glanduloso-punctata ; bracteae subulatae ; pedicelli 1–3 cm. longi. *Bracteolae* 3, ± inaequales, ovatae usque lanceolatae, apice plerumque tricuspidatae vel trifidae rarius integrae, acuminatae, 3–5 mm longae, 2–3·5 mm. latae. *Calyx* campanulatus, 1·2–1·7 cm. longus, usque ad medium irregulariter 5-fidus ; lobi ovati vel lanceolati, acuminati, 3-nerves vel aliqui eorum 4–5-nerves. *Petala* 3–3·5 cm. longa, purpurea,

basi 2–4 mm. tubo stamineo adnata et extra pubescentia, marginibus inferioribus ciliolatis. *Tubus stamineus* 1–1·5 cm. longus, usque ad apicem antheriferus. *Ovarium* 3–4-loculare; stylus circ. 2·5 mm. longus. *Capsula* 3-locularis; valvae obovatae, circ. 1·8 cm. longae, 8–9 mm. latae, rigidae, spongiosae, extra dense glanduloso-punctatae. *Semina* pilis rectis circ. 1 cm. longis dense sericeo-villosa. *Embryo* ellipsoideus, 5–6 mm. longus.

NORTHERN NIGERIA. Kontagora, in the bush after burning, *Dalziel*, 122.

Cienfuegosia was published by Cavanilles in 1787, and the name was altered to *Fugosia* by A. L. de Jussieu two years later. For those who prefer to use the latter name, the species may be known as *F. heteroclada*, Sprague.

885. **Lamprothamnus Fosteri**, *Hutchinson* [Rubiaceae - Alberteae]; affinis *L. zanguebarico*, Hiern, sed foliis acuminatis, petiolis longioribus et corollae tubo breviore differt.

Frutex ramis glabris teretibus, internodiis circiter 3 cm. longis. *Folia* glabra, coriacea, oblonga vel oblongo-elliptica, 13–18 cm. longa, 4–5 cm. lata, interdum basi attenuata, apice obtuse acuminata, marginibus integris; venae laterales utrinque 4–6, supra leviter impressae, subtus prominentes; petiolus circiter 1·5 cm. longus; stipulae deciduae, triangulares, acutae. *Cymae* axillares, multiflorae, quam folia multo breviores; pedunculus 1·5–2 cm. longus; bracteae et bracteolae parvae. *Calycis tubus* 3 mm. diametro, 2 mm. longus, intra glaber, extra breviter pubescens; limbus breviter quinqueundulatus. *Corollae tubus* 2 mm longus, 3 mm. diametro, fauce villosus; lobi 5, oblongi, 8 mm. longi, 3 mm. lati, apice obtusi vel subacuti. *Stamina* exserta; antherae 8 mm. longae, 1·5 mm. latae; filamenta 1 mm. longa. *Ovarium* 5-loculare, loculis uniovulatis; stylus clavatus (rarius bifidus), 1·5 cm. longus, glaber. *Fructus* globosus, minute pubescens.

LAGOS. *Foster*, 4.

886. **Geigeria Wellmanii**, *Hutchinson* [Compositae-Inuloideae]; affinis *G. Hoffmannianae*, Hiern, sed foliis decurrentibus differt.

Herba ascendens, basi lignosa, caulibus glabris laminis decurrentibus bialatis, alis glanduloso-punctatis; internodia 0·5–1 cm. longa. *Folia* alterna, sessilia, oblongo-oblanceolata, 1·5–2·5 cm. longa, 4–8 mm. lata, apice breviter apiculata, integra, tenuiter coriacea, glabra, utrinque glanduloso-punctata, venis utrinque prominulis. *Capitula* sessilia terminalia et ramulos laterales breves terminantia. *Involucri bracteae* 6–8, lanceolatae, 7–8 mm. longae, 1–1·5 mm. latae, ciliatae, ceterum glabrae. *Flores disci* pauci; corollae tubus 2 mm. longus; lobi lineari-lanceolati, 6 mm. longi, 1 mm. lati, supra medium extra sparse pilosi. *Antherae* apiculatae, 3 mm. longae, apiculis 1 mm. longis acutis. *Stylus* breviter pilosus, ramis brevissimis acutis. *Achaenia* teretia, 1·5 mm. longa, dense pilosa. *Pappi segmenta* elliptica vel oblonga, 1·5 mm. longa, 1 mm. lata, acuta. *Receptaculi paleae* filiformes, glabrae.

ANGOLA. Bailundo District, Benguella, *Wellman*.

887. **Hypericophyllum multicaule**, *Hutchinson* [Compositae-Helenioideae]; quoad capitula ad *H. congoense*, quoad habitum ad *H. compositarum* accedens, ab ambabus speciebus pappi setis usque ad apicem ciliatis recedit.

Herba rigida, multicaulis, circiter 25 cm. alta. *Rhizoma* horizontale, crassum. *Caules* erecti, puberuli, graciles, sulcati, basi foliis squamiformibus deltoideis densiuscule obtecti, internodiis 6–10 cm. longis. *Folia* sessilia, ovato-oblonga, obtusa vel rotundata, glabra, firma, 5–6 cm. longa, 1·5–2 cm. lata, venis utrinque subtus magis prominulis, marginibus leviter recurvis. *Capitula* in caulibus solitaria vel in cymas 3-floras disposita, terminalia vel ramos axillares terminantia, circiter 2 cm. longa et 1 cm. diametro; pedunculus usque ad 12 cm. longus, apicem versus incrassatus. *Involucri bracteae* 2-seriatae, oblongo-lanceolatae, acutae, glabrae. *Receptaculum* planum, nudum. *Flores* 12–15; tubus circa medium leviter constrictus, 1 cm. longus, lobis oblongis subacutis 3·5 mm. longis. *Antherae* apiculatae, 4 mm. longae, filamentis 4 mm. longis. *Styli rami* 3 mm. longi, minute glandulosi, truncati. *Achaenia* pubescentia, 8 mm. longa. *Pappi setae* 1·3 cm. longae, usque ad apicem ciliatae.

Northern Nigeria. Kontagora, *Dalziel*, 52.

888. **Othonna decurrens**, *Hutchinson* [Compositae-Senecionideae]; affinis *O. distichae*, N. E. Brown, sed foliis orbicularibus, capitulis majoribus differt.

Caules vel rami simplices, glabri, striati, foliis decurrentibus anguste bialatis, internodiis 7–8 cm. longis. *Folia* disticha, suberecta, sessilia, orbicularia, basi decurrentia, 7 cm. longa, 8 cm. lata, glabra, palmatim 8-venia, venis utrinque prominulis, iis partis decurrentis patulis. *Capitula* solitaria, axillaria vel terminalia, subsessilia, campanulata, circ. 2·8 cm. diametro. *Involucri bracteae* circ. 10, oblongae, leviter acuminatae, utrinque glabrae, 1·5–2 cm. longae, 0·5 cm. latae, marginibus membranaceis connatis. *Flores disci* 20–30; corollae tubus 1·3 cm. longus; lobi fere obsoleti. *Antherae* 1·5 mm. longae. *Stylus* glaber, 1·2 cm. longus, apicem versus incrassatus. *Achaenia* 1 cm. longa, 2·5 mm. lata, pilosa.

Angola. Bailundo District, Benguella, *Wellman*.

889. **Berkheya** (§**Stobaea**) **macrocephala**, *J. M. Wood* [Compositae-Arctotideae]; affinis *B. latifoliae*, Wood et Evans, sed capitulis majoribus solitariis, haud racemoso-paniculatis et involucro distincta.

Herba perennis, rhizomate lignoso duro, 20–30 cm. alta. *Caulis* molliter hirsutus, lana tenuissima araneosus. *Folia basalia* oblonga, basi longe attenuata, in petiolum abeuntia, profunde pinnatifida segmentis utrinque 10–15 imbricatis basin versus cito decrescentibus rotundatis irregulariter lobulatis in margine spinosis spinis 1–3 mm. longis, petiolo incluso 35–45 cm. longa, 7–12 cm. lata, primum lana parca subaraneosa, deinde lana detrita, utrinque parce molliter hirsuta; petiolus interrupte lobato-alatus, lobis superne in lobos laminae abeuntibus inferne minutis eadem structura quam laminae. *Folia caulina* pauca (6–7), anguste oblonga vel oblongo-lanceolata, amplexicaulia, infima pinnatifida, summa vix lobata segmentis vel

lobis haud imbricatis in margine spinosis, a 12 (infima) ad 2·5 (summa) cm. longa, 5–1·2 cm. lata. *Capitula* in caulibus solitaria, basi extus lanato-araneosa, 10–12 cm. diam.; involucri bracteae lineares vel lanceolato-lineares, ad 5 cm. longae, ad 6 mm. latae, apice pungentes, ad margines spinulosae, rigidae, prominenter venosae; receptaculum paleis numerosissimis lineari-oblanceolatis spinuloso-serratis densissime onustum. *Flores* lutei, numerosi; *radii* involucri bracteas paulo superantes, ligula apice acute 4-dentata; *disci* profunde 5-lobati, lobis linearibus acutis. *Achaenia* sericea; pappus biseriatim paleaceus, paleis oblongis obtusis acutisve laceratis serrulatis vel subintegris.

NATAL. Hillside near Richmond in open ground, 600–900 m., Oct. 1906, *J. M. Wood*, 10,031.

890. **Landolphia Monteiroi**, *Dyer MS. ex Stapf* [Apocynaceae]; affinis *L. pachyphyllae*, Stapf, foliis minoribus, nervis paucioribus magis obliquis, corolla maiore distincta.

Frutex vagans, scandens ope cymarum cirrhiformium, novellis rufo-pubescentibus mox glabratis, ramis adultis lenticellis brunneis conspersis. *Folia* oblonga vel lanceolato-oblonga, obtusa vel subacuta, basi obtusa, 4–6 cm. longa, 1·8–2·5 cm. lata, coriacea, costa supra canaliculata subtus prominente, nervis lateralibus utrinque 8–10 subobliquis tenuibus, reticulatione tenui; petiolus 5–6 mm. longus. *Panicula* pedunculo 2·5–5 cm. longo suffulta, parce ramosa ramis cymas densas gerentibus. *Flores* subsessiles. *Calyx* ad 3 mm. longus, extus rufo- vel ferrugineo-tomentosus; sepala ovato-oblonga subacuta. *Corolla* alba, suaveolens; alabastrum ad 3·5 mm. longum; tubus 12–14 mm. longus, supra calycem ipsum paulo inflatus, tenuiter pubescens; lobi lineari-oblongi, ad 2·5 mm. longi, ad margines tenuiter ciliati. *Stamina* 3 mm. supra corollae basin inserta. *Ovarium* tenuissime albido-sericeo-tomentosum; ovula circiter 30 cum unaquaque placenta, 6-seriata. *Fructus* luteus, magnitudine parvi Pomi aurantiaci.—*Ancylobotrys Petersiana* var. *Forbesiana*, Pierre-Bull. Soc. Linn. Paris, 1898, p. 91 (name only, in parte).

PORTUGUESE EAST AFRICA. Delagoa Bay, *Monteiro*, 37.

Pierre also quotes (l.c.) a specimen collected by Forbes in the same locality, under *Ancylobotrys Petersiana* var. *Forbesiana*. This, however, is typical *Landolphia Petersiana*, Dyer.

891. **Wrightia natalensis**, *Stapf* [Apocynaceae]; nulli generis speciei arcte affinis, habitu *W. tinctoriae* accedens, sed floribus luteis et coronae forma distincta.

Frutex ramis novellis rufo-pubescentibus mox glabratis tandem cortice tenui cinereo obtectis. *Folia* lanceolata, subacuta, basi cuneata, ad 7·5 cm. longa, ad 1·8 cm. lata (potius immatura), subtus ima basi rufo-pubescentia, ceterum glabra, nervis lateralibus circiter 9; petiolus tenuis, 4–8 mm. longus. *Panicula* brevis, subcorymbosa, 2·5 cm. vix diametro excedens, rufo-pubescens, bracteis lineari-oblongis vel linearibus 3–4 mm. longis; pedicelli ad 8 mm. longi. *Calyx* basi pubescens, superne subglaber, 5–6 mm. longus; sepala oblonga, obtusa, intus squamis solitariis munita, margine membranaceo. *Corolla* flava, extra dense minute papillosa; tubus 4 mm. longus; lobi oblongi,

subobtusi, 8 mm. longi, basi squama emarginata facie appendicibus 2 filiformibus brevibus instructa muniti, squamis ad medium in coronam brevem connatis. *Antherae* 4 mm. longae, tenuiter acuminatae, dorso glabrae. *Folliculi* ignoti.

NATAL. Near the Umzinyati Falls, 240 m., *Haygarth in Herb. J. M. Wood*, 7861.

This species is described under *Wrightia* because the general facies of the plant is more of that genus than of *Pleioceras;* but it is quite possible that it will turn out to belong to the latter when the fruit comes to be known.

892. **Strophanthus Gerrardii**, *Stapf* [Apocynaceae]; affinis *S. Petersiano*, Klotzsch, sed foliis angustioribus, sepalis potius subulatis, forma corollae diversa.

Frutex glaber ramis gracilibus castaneis, lenticellis albidis crebris. *Folia* anguste ovata vel ovato-lanceolata, acuta vel subacuminata, basi rotundata vel subacuta, 3–6 cm. longa, 1·8–2·5 cm. lata, papyracea, nervis secondariis utrinque circiter 5 uti venis tenuissimis vel obscuris; petiolus 4 mm. longus. *Cymae* in ramis abbreviatis terminales, ad florem solitarium redactae, cum foliis coëtaneae; pedunculus gracilis, 4–12 mm. longus, vel vix ullus; bracteae mox deciduae; pedicelli graciles, ad 12 mm. longi. *Calyx* 8–10 mm. longus; sepala subulata basi latiore. *Corolla* extus glabra, intus pubescens; tubi pars infrastaminalis 3 lin. longa, suprastaminalis tubuloso-campanulata, 9 mm. longa, ad 8 mm. lata (exsiccata); lobi e basi ovata vel lanceolata in caudas lineares attenuati, toti 3·6 mm. longi; faucis squamae lineari-subulatae, 2–3 mm. longae. *Antherae* acumine tenui acuto.

NATAL. Without precise locality, *Gerrard*, 1795.

893. **Oncinotis natalensis**, *Stapf* [Apocynaceae]; affinis *O. gracili*, *Stapf.*, sed tomento minuto, foliis basi magis acutis brevius petiolatis, nervis valde obliquis paucioribus, racemis brevioribus differt.

Frutex scandens, ramulis teretibus, novellis minute denseque fulvo-tomentosis, mox glabrescentibus, demum fuscis vel brunneis, lenticellis albidis. *Folia* obovato-oblonga vel oblanceolata, abrupte acuminata, basi acuta, 7·5–9 cm. longa, 2·5–4 cm. lata, firme membranacea, fulvo- vel rufo-tomentella in gemmis novellis, cito glabra, nervis secondariis utrinque 3–4 valde obliquis; petiolus 4–5 mm. longus. *Flores* in racemis vel paniculis numerosis axillaribus minute fulvo-tomentellis 2·5 cm. longis breviter pedunculatis; bracteae ovato-lanceolatae, parvae, mox deciduae; pedicelli brevissimi. *Calyx* 2 mm. longus, minute fulvo-tomentellus; sepala ovata, subacuta. *Corolla* olivaceo-virescens, extra minute tomentella (tubus quidem), gracilis, in alabastro subsubulata; tubus fere 3 mm. longus; lobi lineares, 3 mm. longi. *Folliculi* cylindrici, divaricati, 15–17 cm. longi, 6 mm. diametro, minute ochraceo-tomentelli, deinde glabrescentes; semina oblongo-linearia, 12–14 mm. longa, coma 3·5 c.m. longa.

NATAL. Inanda, in woods, *J. M. Wood*, 1009, 6159.

894. **Adenium oleifolium**, *Stapf* [Apocynaceae]; *A. somalensi*, Balf. f., simile, sed foliis latioribus obtusis molliter pubescentibus, corollae tubo intus supra stamina furfuraceo-papilloso differt.

Frutex omnibus partibus molliter pubescens vel subtomentosus. *Folia* linearia vel oblongo-linearia, obtusa, basi magis minusve attenuata, sessilia vel subsessilia, 7·5–10 cm. longa, 8–12 mm. lata, crassiuscula, glauca, nervis secondariis plane obscuris. *Cymae* terminales, pauciflorae, subsessiles, albo-tomentosae; bracteae lineares, 6 mm. longae; pedicelli perbreves. *Calyx* 6–7 mm. longus, albo-tomentosus; sepala lanceolata, subacuta. *Corolla* rosea, extus pubescens; pars tubi infrastaminalis 8–9 mm. longa, infra stamina lineis 5 dense tomentosis notata, basi glabra; pars suprastaminalis late infundibiliformi-campanulata, intus furfuraceo-pilosa, 16 mm. longa; squamae faucium sacculum obtriangularem formantes; lobi late ovati, cuspidato-acuminati, 12–14 mm. longi. *Antherae* 6 mm. longae, caudis laxe pilosis exsertis 12 mm. longis.

South Africa. Transvaal, without precise locality, *Podd*; Bechuanaland, Bakwena Country, near the Suriname River, 1050 m., *Holub*.

895. **Adenium swazicum**, *Stapf* [Apocynaceae]; *A. Boehmiano* affine, sed foliis multo angustioribus glabrescentibus, foliorum nervis obscuris obliquis distinctum.

Frutex caule ramisque (novellis exceptis) glabris, exsiccatis albicantibus. *Folia* obovato-cuneata, apice rotundata, sensim in basin cuneiformem attenuata, 7·5–10 cm. longa, 1·8–3 cm. lata, subcoriacea, juvenilia molliter albo-tomentosa, deinde magis minusve glabrescentia, glauca, nervis secondariis obliquis obscuris 3–5 mm. distantibus; petiolus ad 8 mm. longus. *Cymae* terminales vel pseudo-axillares, cinereo-tomentosae; bracteae lanceolata, 5 mm. longae; pedicelli breves vel ad 10 mm. longae. *Calyx* 8 mm. longus; sepala lanceolata, acuminata, pubescentia. *Corolla* rosea, faucibus purpureis; pars tubi infrastaminalis 8 mm. longa, infra stamina lineis 5 dense tomentosis notata, basi glabra; pars suprastaminalis 2·5 cm. longa, late tubulosa, intus glabra, squamis faucium vix ullis; lobi rotundato-obovati, fere 2·5 cm. longi. *Antherae* 6 mm. longae, dorso pilosae, caudis 6–10 mm. longis obtusis.

South Africa. Swaziland, *Rathbone in Herb. Bolus*, 6208; *Saunders*; *J. M. Wood*, 3511.

896. **Ehretia trachyphylla**, *C. H. Wright* [Boraginaceae]; ab *E. Bakeri*, Britten, foliis subtus scabris recedit.

Arbor parva, ramis lenticillatis. *Folia* elliptica vel oblongo-elliptica, acuminata, basi obtusa, 17 cm. longa, 6–7 cm. lata, integra, supra glabra, subtus albo-scabra. *Cymae* laxe paniculatim dispositae, terminales, pubescentes. *Calyx* glaber, 3 mm. longus, fere ad basin in lobos 5 anguste lanceolatos divisus. *Corolla* alba, 5 mm. longa; lobi 5, spathulati, integri, 3 mm. longi. *Stamina* ad corollae medium affixa; filamenta glabra. *Ovarium* ovoideum; stylus subulatus, pilosus, 2-lobus. *Fructus* ellipticus, 5-costatus, 12 mm. longus, 7 mm. latus, pyrenis duabus bilocularibus fissus.

Gold Coast. Aburi, *W. H. Johnson*, 974.

897. **Falkia canescens**, *C. H. Wright* [Convolvulaceae-Dichondreae] ; *F. dichondroidem*, Baker, simulans, floribus cymosim dispositis differt.

Caulis tenuis, teres, pilosus, apice canescens. *Folia* rotundato-cordata, 14 mm. diam., integra, primum subtus dense tomentosa, brevi tempore glabrescentia ; petiolus 15 mm. longus, pilosus. *Cymae* axillares, pauciflorae. *Calyx* extus canescens ; tubus brevis ; lobi deltoideo-ovati, acuti, 5 mm. longi, 2 mm. lati. *Corolla* extus pilosa ; tubus 4 mm. longus ; lobi oblongi, obtusi, 1·5 mm. longi. *Stamina* quam corolla paullo breviora, inaequalia ; antherae subglobosae. *Ovarii* lobi coma pilis albis ovario aequilongis coronati ; styli filiformes, 3 mm. longi ; stigmata capitata.

British East Africa. Nairobi, *H. Powell*, 10.

This has the general appearance of *F. dichondroides*, Baker, but differs from that and all other species of the genus in the flowers not being solitary in each leaf-axil. The hoary leaf- and flower-buds are very conspicuous.

898. **Clerodendron (Cyclonema) phlebodes**, *C. H. Wright* [Verbenaceae - Viticeae] ; *C. sansibarensi*, Gürke, proximum, quod foliis utrinque glaberrimis corollaeque lobis lanceolatis recedit.

Frutex circa 1·8 m. altus. *Rami* dense pubescentes. *Folia* ternata, ovata, utrinque acuminata, serrata, utrinque pubescentia, subtus pallidiora, 20 cm. longa, 9 cm. lata ; petiolus 3 cm. longus, dense pubescens. *Panicula* terminalis, pyramidalis, laxiflora ; ramuli graciles, pubescentes ; bracteolae subulatae, 1 mm. longae ; pedicelli 2 mm. longi. *Calyx* breviter campanulatus, 3 mm. diam. ; lobi breves, rotundati, ciliati. *Corolla* caerulea ; tubus 6 mm. longus, 2 mm. diam., prope basin abrupte decurvatus ; limbus 15 mm. diam. ; lobi patentes vel subrecurvati, obovati, undulati, ciliati, venis conspicuis anastomosantibus instructi. *Stamina* corollae tubo fere duplo longiora ; filamenta parte inferiore dense tomentosa. *Ovarium* subglobosum, glabrum ; stylus demum 22 mm. longus.

Uganda Protectorate. Entebbe, *Mahon*.

899. **Ocimum (Hierocimum) odontopetalum**, *C. H. Wright* [Labiatae-Ocimoideae] ; ex affinitate *O. Schweinfurthii*, Briq., a quo foliis oblanceolatis nervis subtus minus prominulis glandulis numerosissimis recedit.

Radix lignosa, crassa. *Caules* plures ex apice radicis erecti, virgati, simplices rarius ramosi, pubescentes. *Folia* oblanceolata, obtusa, 4–5 cm. longa, 0·75–1 cm. lata, remote serrata, supra sparse hirsuta impresseque glandulosa, subtus pallidiora ad nervos pubescentia, glandulis numerosissimis impressis instructa. *Spicae* terminales, congestae, 2–3 cm. longae ; bracteae 1 mm. longae, triangulares, crassae. *Calyx* 5 mm. longus, pubescens ; labium superius integrum, ovatum, 3-costatum ; labium inferius transverse oblongum, breviter acuminatum, 2-mucronatum, nervis 4 centralibus apice conniventibus, ceteris radiantibus. *Corolla* 12 mm. longa, alba vel dilute rosea ; tubus e calyce breviter exsertus ; lobi elongati, denticulati. *Stamina* quam corolla duplo longiora ; filamenta superiora prope basin geniculata denseque pilosa.

British East Africa. Nyasaland: Blantyre, *Scott*; Mount Mlanji, *Whyte*; Mlanji Plateau, *McClounie*; Uvera, *Miss E. Kenyon*; Nyika Plateau, *McClounie*, 30.

In the Flora of Tropical Africa, v. 342, these plants were included under *O. affine*, Hochst., which differs in having broader leaves and non-denticulate corolla-lobes.

900. **Dasystachys nervata**, *C.H. Wright* [Liliaceae-Asphodeleae]; *D. Grantii*, Benth., affinis, quae bracteis quam flores multo longioribus foliisque flaccidis recedit.

Rhizoma ignotum. *Folia* per anthesin 15 cm. longa, 1·5 cm. lata, oblonga, acuminata, rigida, apice cucullata, utrinque glaberrima, nervis primariis circa 17 prominentibus. *Scapus* 22 cm. longus, cylindricus, parte superiore minute puberulus; racemus 10 cm. longus, rhachide pedicellisque glabri; pedicelli 2 mm. longi. *Perianthii* segmenta oblonga, valde concava, obtusa, 3·5 mm. longa, 1·5 mm. lata, alba, extus ad apicem luteo-puberula, uninervia. *Stamina* perianthii segmentis paullo breviora; filamenta e basi lanceolata complanata subulata; antherae 1·5 mm. longae, 1 mm. latae, obtusae. *Ovarium* trilobum; lobis globosis; stylus ovario aequilongus, columnaris; stigma punctiforme; ovula in quoque loculo 4–6. *Capsula* 4 mm. diam.

Rhodesia. Between Broken Hill zinc mine and Bwana M'cuba copper mine, *C. E. F. Allen*, 338.

XI.—SASSAFRAS IN CHINA.

(*Sassafras Tzumu*, Hemsl.)

W. B. Hemsley.

A few days before Mr. Wilson left on his third journey to China, he brought me some specimens of a laurel, collected by himself in the Patung district of Hupeh, which he had identified with the North American *Sassafras officinale*, Nees, and also with my *Lindera Tzumu* (Journ. Linn. Soc., vol. xxvi. p. 392) and *Litsea laxiflora* (loc. cit. p. 383, t. 8). He was quite right as to the two last, which were described from imperfect materials; the former from a specimen bearing young fruit, and the latter from a specimen bearing flowers of one sex only and no leaves; both instances of imprudence in founding species on imperfect specimens. He was also right, I think, as to the Chinese tree being a species of *Sassafras*; but, although there is a striking similarity between the dried specimens from China and those of *S. officinale* from North America, an examination of the flowers has revealed differences that are almost of generic importance, as the genera of Lauraceae are limited. Both species have heteromorphic, deciduous leaves with the same kind and range of variation, and the inflorescences of both sexes, which appear before the leaves, present no obvious differences. The flowers of the North American species are, however, somewhat larger, and the floral diagram is quite different. I have not examined a large number of flowers, but

those examined agree with the descriptions and the excellent figures in Sargent's "Silva of North America," vol. vii. t. 304. Only a small number of flowers of the Chinese species were examined, but they were so far uniform in structure. The following is a comparison of the flowers of the two species :—

	S. officinale, Nees.	*S. Tzumu*, Hemsl.
Male flowers ...	glabrous within	hairy within.
Stamens ...	6+3 with the filaments biglandular at the base	6 + 3 with the filaments biglandular at the base.
Staminodes ...	none	3, alternating with the glandular stamens.
Pistillode ...	none	prominent.
Female flowers	glabrous within	hairy within.
Staminodes ...	3 + 3	6+3+3, similar to the stamens and staminodes in the ♂.

As it is intended to publish a figure and full description of *S. Tzumu* in *Hooker's Icones Plantarum*, the foregoing differential characters will be sufficient here.

As Sargent remarks, *Sassafras officinale* or *Sassafras Sassafras*, as he has called it, was probably one of the first North American trees to be introduced into Europe. Gerarde describes it in his "Herbal" (1597), and in Johnson's edition of the same work (1633), he states that his figure was made from a small tree growing in the garden of Mr. Wilmote at Bow, some few years previously. In 1838 Loudon (*Arboretum Britannicum*, vol. iii. p. 1303) recorded specimen trees at Kew and Syon House sixty feet high, and the latter as having a trunk three feet in diameter.

Sassafras Tzumu, Hemsl., is a valuable timber tree which, on the authority of Dr. A. Henry, sometimes attains very large dimensions. It is the *tzu-mu* or *huang-chin* of Central China, and appears to be abundant in the Province of Hupeh. Kew also possesses specimens from Ningpo, Chekiang (*Faber*), and from Kiukiang, Kiangsi (*Maries*).

XII.—DECADES KEWENSES

PLANTARUM NOVARUM IN HERBARIO HORTI REGII CONSERVATARUM.

DECAS XLIII.

421. **Aconitum Gammiei**, *Stapf* [Ranunculaceae]; affinis *A. leucantho*, Stapf, differt glabritie, foliis multo magis dissectis divisionibus linearibus brevius petiolatis, galea magis depressa et magis hiante, nectario haud calcarato, sed in dorso basin cucullae versus gibbosa.

Tubera ignota. *Caulis* ad 70 cm. altus, simplex vel superne parce ramosus, gracilis, flexuosus, teres, glaberrimus. *Folia* sparsa, 9–12, infima sub anthesi emarcida, remotiuscula, petiolata; petioli graciles, intermedii ad 4 cm. longi, summi brevissimi; lamina glabra, ambitu cordato-rotundata, sinu subangusto 1–2 cm. alto, a sinu ad apicem 3–4 cm. longa, 5–6 cm. lata, ad basin 3-partita, segmento intermedio ambitu rhomboideo-cuneato basi anguste attenuato 2–2·5 cm. lato 3–5-laciniato, laciniis 2–3 mm. latis linearibus parce lacinulatis acutis, segmentis lateralibus trapezoideis inaequaliter fere ad basin 2-partitis ceterum intermedio similibus; folia summa minora et minus divisa. *Inflorescentiae* terminales, pauciflorae, racemosae vel subpaniculatae, laxae, glabrae; bracteae inferiores foliis proximis similes sed segmentis lateralibus magis reductis, superiores parvae, laciniatae; bracteolae foliaceae vel lineares, parvae; pedicel ligraciles, demum ad 4 cm. longi. *Sepala* caerulea; summum galeatum, galea glabra depressa circiter 17 mm. alta a basi ad apicem 17–20 mm. metiente 6–7 mm. lata acute rostrata late hiante, ungue sensim a basi dilatato; sepala lateralia orbicularia, ad 15 mm. longa, margine ciliolata, ungue lato brevissimo; inferiora oblonga, descendentia, 12–14 mm. longa. *Nectaria* hispidula, ungue superne prorsus curvato 12–18 mm. longo, cuculla subhorizontali 3–5 mm. longa apice obtusissima dorso inferne gibbosa, labio ad 5 mm. longo latiusculo subintegro. *Filamenta* ad 4 mm. longa, late alata ad medium, deinde subito contracta, parce pilosula. *Carpella* 5, arcte conniventia, ovoidea, glabra, exsiccando nigricantia. *Fructus* ignoti.

Sikkim Himalaya. Chola Range, Chamanaka, 3750 m., *Gammie*, 1310.

422. **Dubouzetia caudiculata**, *Sprague* [Elaeocarpaceae]; affinis *D. campanulatae*, Panch., a qua foliis caudiculatis supra mollibus subtus villosis recedit.

Ramuli exstantes lignosi, circiter 5 mm. diametro, villoso-tomentosi. *Folia* oblanceolato-oblonga vel obovato-oblonga, apice acute caudiculata, caudicula usque ad 5 mm. longa, basi rotundata, 9–15 cm. longa, 2–5 cm. lata, repando-dentata, supra mollia, minute puberula, vena media pubescente vel tomentosa, subtus praesertim venis villoso-tomentosa demum sparsius villosa; venae supra leviter vel vix impressae, subtus prominentes; petiolus 6–9 mm. longus, villoso-tomentosus. *Stipulae* filiformi-subulatae, 9-14 mm. longae, villosae, apice glabrae et leviter curvatae. *Flores* bini, rarius superposite bigemini. *Pedunculi* circiter 1 cm. longi, ut pedicelli sepalaque extra, dense villoso-tomentosi; pedicelli 2·5–3·5 cm. longi; bracteae plures, stipulis conformes, sed minores et plerumque ± connatae. *Sepala* attenuato-lanceolata, acuta, 2·7–2·8 cm. longa, 5–7 mm. lata, intus sericea. *Petala* oblonga, ad ¼ supra basin leviter constricta, apice obtusiuscula, 2·8–2·9 cm. longa, 8·5 mm. lata (*in alabastro*), quadrante infimo intus pubescente et medio incrassato. *Discus* 3 mm. altus. *Stamina* circiter 40; filamenta usque ad 1·5 cm. longa, fere omnino glabra; antherae usque ad 1·2 cm. longae, dense acute papillatae. *Ovarium* fere orbiculare, 4–5 mm. diametro, dense villoso-tomentosum, 5-loculare, loculis 12–13-ovulatis; stylus circiter 1·5 cm. longus.

New Caledonia. Poinlotch Mountain, near Gatope, *Vieillard*, 2354; Panloitche Mountains, *Caldwell*.

It should be noted that the description of the petals is from a half-opened bud. No fully expanded petals are present on either of the Kew specimens, but from portions of petals which have been preserved, it appears that they are nearly 1·5 cm. broad when fully developed.

"Poinlotch" and "Panloitche" are doubtless merely different spellings of the same mountain, which is presumably situated in the Pouanloit district, marked in Mager's Atlas Colonial. Gatope Bay is situated about 162° 20′ E., 21° S.

423. **Dubouzetia acuminata**, *Sprague* [Elaeocarpaceae]; affinis *D. campanulatae*, Panch., a qua sepalis acuminatis extra dense griseo-pubescentibus tantum (nec rufo-tomentosis) recedit.

Ramulus unicus exstans lignosus, densiuscule pubescens, basi circiter 3 mm. diametro. *Folia* oblongo-oblanceolata, apice rotundata, basi in petiolum augustata, 2–4·5 cm. longa, 0·9–1·8 cm. lata, integra, marginibus reflexis, supra nitidula, juventute puberula demum glabrescentia, vena media et lateralibus valde impressis, subtus cano-tomentella, vena media et lateralibus prominentibus, venulis prominulis; petiolus 6–8 mm. longus, densiuscule pubescens. *Flores* bini. *Pedunculi* 4–12 mm. longi, ut pedicelli dense pubescentes; pedicelli 2–2·5 cm. longi. *Sepala* lanceolata, acuminata, 2–2·2 cm. longa, 5–6 mm. lata, extra dense breviter appresse pubescentia, intus sericeo-pubescentia. *Petala* subspathulato-oblonga, apiculata, 3–3·3 cm. longa, 1·2 cm. lata, triente inferiore intus pubescente, ceterum glabriuscula. *Discus* circ. 3 mm. altus. *Stamina* circ. 30; filamenta usque ad 1·8 cm. longa, fere glabra; antherae circ. 8 mm. longae, dense acute papillatae. *Ovarium* ovoideo-globosum, circ. 5 mm. altum, valde 5-costatum, tomentellum, 5-loculare, loculis circ. 11-ovulatis intus angulis exterioribus parce pilosis; stylus vix 2 cm. longus, inferne dense pubescens, superne glabriusculus.

NEW CALEDONIA. Near Noumea, *Caldwell*.

424. **Dysoxylum pachyphyllum**, *Hemsl.* in Hook. Ic. Plant. t. 2827, ined. [Meliaceae]: *D. Fraserano* proximum sed foliis crassis coriaceis obovato-oblongis obtusissimis vel rotundatis differt.

Arbor 12–18 m. alta, fere undique glabra, ramis florigeris crassis *Folia* paripinnata, cum petiolo communi usque ad 40 cm. longa; foliola 8–12, breviter petiolulata, petiolulis incrassatis, 4–15 cm. longa. *Paniculae* augustae, pauciflorae (an semper?), foliis breviores. *Flores* 3–4 mm. diametro, bene evoluti non visi, tetrameri, puberuli. *Calycis* dentes deltoidei. *Petala* crassa. *Stamina* 8; antherae tubi staminei lobos paulo superantes. *Stigma* peltatum. *Capsula* subglobosa, 3–4 cm. longa, coriacea, obscure 3-loba, 3-sperma. *Semina* ovoidea, in arillo crasso cupuliformi usque ad medium immersa.—*D. Fraseranum*, F. Muell, Fragm. Phytogr. Austral., vol. ix., p. 61, quoad plantam ex insula Lord Howe Island; Hemsl. in Ann. Bot., vol. x., p. 234.

AUSTRALIA. Lord Howe Island, *C. Moore*, 24, 35.

425. **Dalbergia Lacei**, *Prain* [Leguminosae-Dalbergieae]; species e grege *Ovatarum*, juxta *D. ovatam* ipsam ponenda, differt tamen dentibus calycis omnibus obtusis, staminibus 10, foliolis tenuioribus subtusque pubescentibus.

Arbor, ramulis junioribus pallidis. *Folia* 22–25 cm. longa ; foliola 7–9, ovata, basi late cuneata, apice longius acuminata, chartacea, subtus parcius pubescentia, supra glabra, 5·5–8 cm. longa, 4–4·5 cm. lata ; rachis pallida, 15–18 cm. longa, pulvino parce puberulo excepto glabra ; petioluli 4 mm. longi, pubescentes ; stipulae parvulae, puberulae, caducae. *Flores* in paniculis terminalibus ad axillas foliorum summorum usque extensis 9–10 cm. longis 6–7 cm. latis dispositi ; pedunculi 3 cm. longi, ramisque 1·5 cm. longis parce puberuli ; pedicelli 4 mm. longi, pubescentes. *Calyx* campanulatus, glaber, basi bracteolis ovatis 2 glabris involutus, 5-dentatus, segmentis obtusis, summis subconnatis, imo reliqua parum excedente, omnibus quam tubo parum brevioribus. *Corolla* albida, petalis vexillo oblongo apice parum retuso basi cuneato excepto distincte unguiculatis ; alae callosae latere superiore distincte hastatae, lobo ungui fere aequilongo. *Stamina* 10, monadelpha, vagina supra aperta, filamentis dimidio superiore liberis. *Ovarium* glabrum, longe stipitatum ; stylus gracilis ; stigma parvum ; ovula 4. *Legumen* ignotum.

BURMA. Henzada ; N. Myanaung Reserve, *Lace*, 2810.

The leaves pubescent beneath bring this tree near to the species described from somewhat incomplete material as *D. tonkinensis*, of which the fruits are known but not the flowers, and which is therefore only tentatively considered a member of the group *Ovatae*. *D. Lacei*, however, cannot be referred to *D. tonkinensis* owing to its inflorescences being terminal.

426. **Vitex smilacifolia**, *H. H. W. Pearson* [Verbenaceae-Viticeae] ; species distinctissima foliis 1-foliolatis iis *Smilacis barbatae*, Wall., simillimis.

Rami subteretes, glabri, nodis incrassati, cicatricibus foliorum prominentibus, cortice cinereo vel fulvo. *Folia* 1-foliolata, opposita, glaberrima ; petioli crassi, supra complanati, basi apiceque incrassati, 1–2 cm. longi ; foliolum sessile, elliptico-oblongum, acuminatum vel caudato-acuminatum, subacutum, basi rotundatum, 12–20 cm. longum, 4–8 cm. latum, coriaceum, marginibus integris subrevolutis, supra nitens, nervis subparallelis utrinque 3–4 infra medium costae ortis ascendentibus ad apicem supra prominulis subtus prominentibus, venis ultimis reticulatis, supra ± obscuris. *Panicula* terminalis, ramosa, laxa, glaberrima, infra plus minus foliosa, 25–30 cm. longa, 20–23 cm. lata. *Flores* brevissime pedicellati, circ. 6 mm. longi, in cymas paucifloras, breviter pedunculatas, oppositas vel alternas, minute bracteatas distantes dispositi. *Calyx* campanulatus, breviter 5-dentatus, 1·5–2 mm. longus, ore 2 mm. diametro, utrinque sparsiuscule minute glandulosus, intus glaber, mox accrescens, dentibus ciliolatis. *Corollae tubus* cylindricus, supra medium dilatatus, 4–6 mm. longus, extus glandulis peltatis sessilibus vestitus, intus supra medium praecipue antice villosus ; lobi utrinque minute glandulosi ; anterior flabelliformis vel subrotundus, 2·5–3 mm. latus ; laterales posteriorque minores. *Stamina* vix exserta, infra medium tubi inserta ; filamenta basi dilatata, villosa. *Ovarium* globosum, dense minute glandulosum ; stylus apice breviter bilobus, circ. 6 mm. longus. *Drupa* (? matura) obovoidea, e calyce accrescente paullo exserta, atra, glandulosa, 4 mm. longa, 3 mm. lata.

BORNEO. Sarawak, *Beccari*, 1097. 1137.

427. **Vitex sarawakana**, *H. H. W. Pearson* [Verbenaceae-Viticeae]; a ceteris specibus unifoliolatis foliis supra bullatis subtus pulchre reticulatis et panicula laxa facile distinguitur.

Rami tetragoni, glabri, nodis incrassatis, cortice cinereo in lamellas tenues soluto. *Folia* opposita, 1-foliolata, glaberrima; petioli 1–2 cm. longi, supra late sulcati, basi et apice incrassati; foliolum sessile, oblongum vel oblongo-lanceolatum, acuminatum, subacutum, basi rotundatum vel subcuneatum, 10–15 cm. longum, 2–6 cm. latum, bullatum, tenuiter coriaceum, marginibus integris subrevolutis, nervis primariis utrinque 6–10 supra prominulis subtus prominentibus curvato-ascendentibus, venulis subtus perclaris. *Panicula* terminalis vel axillaris, laxa, glabra vel minute puberula, nodis distantibus. *Flores* pedicellati, in cymas bracteatas pedunculatas 3-floras dispositi, 7–10 mm. longi. *Calyx* campanulatus, 2–2·5 mm. longus, breviter 5-dentatus, extus minute appresse pubescens; dentes circ. 0·5 mm. longi. *Corollae tubus* cylindricus, circ. 5 mm. longus, extus supra medium appresse pubescens, intus villosus; lobus anterior flabelliformis, 2 mm. longus, 2·5 mm. latus, extus pubescens, intus basi villosus; lobi laterales et posterior minores, breviter oblongi, obtusi, pubescentes. *Stamina* vix exserta, infra medium tubi inserta; filamenta villosa. *Ovarium* globosum, minute dense pubescens; stylus apice breviter acuteque bilobus, 7–8 mm. longus. *Drupa* obconica vel obovoidea, e calyce subaccrescente multo exserta, 1 cm. longa, 7 mm. lata, minute pubescens.

BORNEO. Sarawak, *Beccari*, 2280, 2506, 2851.

428. **Kaempferia (Soncorus) lutea**, *C. H. Wright* [Scitamineae-Zingibereae]; *K. Andersoni*, Baker, affinis, labello staminodiisque lateralibus non pilosis differt.

Acaulis. *Folia* 3–4, disticha, oblonga, apice basique attenuata, 22 cm. longa, 9 cm. lata, supra viridia, glabra, subtus pallidiora, pilosa; nervi laterales circa 8 mm. inter se distantes; petiolus 6 cm. longus, pilosus, alis 5 mm. latis marginatus. *Scapus* centralis, 8 cm. altus; bracteae circa 8, rotundatae, breviter mucronatae, 2 cm. latae, virides; bracteolae late ovatae, obtusae, 2·5 cm. longae, 1·3 cm. latae, translucentes. *Calyx* 1·6 cm. longus, 3 mm. diam., spathaceo-fissus. *Corolla* lutea; tubus cylindricus, circa 2 cm. longus; lobi oblongi, obtusi, 1·5 cm. longi, 6 mm. lati; labellum integrum, aurantiacum, late ovatum, truncatum, 2·5 cm. longum, 1·1 cm. latum; staminodia lateralia corollae lobis similia. *Filamentum* complanatum, 2 mm. longum, 1·5 mm. latum; antherae loculi elliptici, 5·5 mm. longi, inter se 1 mm. distantes; connectivum concavum, apice in cristam reflexam leviter 2-lobam productum *Ovarium* glabrum, basi 3-loculare, apice 1-loculare.

MALAY PENINSULA. Penang, *Ridley*.

Described from a plant which flowered at Kew in October, 1903, and again in October, 1906.

429. **Tillandsia (Anoplophytum) argentina**, *C. H. Wright* [Bromeliaceae-Tillandsieae] *T. dianthoideae*, Rossi, proxima, foliis non longe acuminatis, petalis roseis quam spathis multo longioribus recedit.

Caulis brevis. *Folia* conferta, e basi vaginante 1 cm. lata lanceolata, leviter falcata, obtusiuscula, carnosa, appresse lepidota, 10 cm. longa. *Scapi* quam folia paullo longiores, simpliciter spicati ; bracteae ovatae, acuminatae, roseo-tinctae, 1·5 cm. longae, 5 mm. latae, apice marginibusque membranaceis. *Sepala* late lanceolata, breviter mucronata, 1·5 cm. longa, 4 mm. lata, circa 11-nervia, rigida, marginibus membranaceis. *Petala* rosea, oblanceolata, obtusa, 3 cm. longa, prope apicem 4 mm. lata, tenuia. *Filamenta* 15 cm. longa, complanata, recta ; antherae lineares, 8 mm. longae, dorsifixae. *Ovarium* 8 mm. longum, oblongo-conicum ; stylus cylindricus, 1·2 cm. longus ; stigmata recurvata, 1·5 mm. longa, acuta ; ovula apice breviter caudata.

ARGENTINE REPUBLIC. *T. Stuckert.*

430. **Gymnogramme (Eugymnogramme) hirtipes,** *C. H. Wright* [Filices-Polypodiaceae] ; ex affinitate *G. flabellatae*, Hook., a qua pinnulis non cuneato-flabellatis differt.

Stipes gracilis, rigidus, ater, 16 cm. altus, hirsutus. *Frons* oblonga, acuminata, 16 cm. longa, 3 cm. lata, tripinnatifida, crassa, utrinque sparse hirsuta ; rhachis atra, dense hirsuta. *Pinnae* erecto-patentes ; pinnulae oblongae, 2–3 mm. longae, 1 mm. latae, saepe emarginatae ; nervi simplices. *Sori* 1·5 mm. longi.

COLOMBIA. *R. B. White.*

XIII.—ECONOMIC NOTES : LIVERPOOL.

J. M. HILLIER.

A visit is annually paid to Liverpool by the Keeper of the Museums at Kew for the purpose of making enquiries on the spot regarding various economic products which reach that port. The following notes, made during the latest of these visits, November, 1906, give additional information with reference to several products and industries that have from time to time been dealt with in the *Kew Bulletin.*

PALM OIL.—This substance is derived from the pericarp of the fruit of *Elaeis guineensis* and is a product distinct from the oil obtained from the palm kernel which is alluded to in another note.

In Liverpool commercial circles from 25 to 30 varieties of Palm Oil are recognised. They are classified as :—

i. Soft oils ; mostly from Bonny, Opobo, Calabar and Lagos :

ii. Mixed oils ; from the Gold Coast and the Niger :

iii. Hard oils ; from the Niger, Oil River District, Liberia, the Gold Coast and the Congo.

Of these oils that from Lagos is esteemed the best and purest and as a rule the most reliable. Generally speaking the price of Palm Oil is governed by the price of Tallow.

When shipments of Palm Oil are being dealt with a sample is taken from each cask ; the samples are lumped together in a pail and then analysed before selling. To test the contents of casks for leakage, which at times is very considerable, a long gouge is driven through the oil from the bunghole and allowance is made for any shortage. The oil is sold by the ton ; the maximum price for Best Lagos at present is about £33 10*s.* per ton.

The casks used in importing this oil are made of oak shipped from the United States. A completed cask, including labour and material, costs from 23 to 24 shillings ; much of the work is done as piece-work. As freight on casks is paid by space, when a cask is finished the staves are marked consecutively beginning at the bung-stave, with roman figures ; this done the cask is taken to pieces and the pieces packed with a minimum waste of space. The staves of 10 casks when packed occupy the space of one cask ; the bottoms and tops with the iron hoops are similarly packed in such a way as to economise space.

To clean old casks fires of shavings are lighted inside each. These fires burn furiously for a time ; when the oily lining has been completely burnt off, the cask is turned on its mouth so as to extinguish the fire. Very old casks have their use ; they may be cut down into smaller sizes ; old staves are also used for repairing defective casks. At the docks large quantities of Rushes (*Scirpus lacustris*), may be seen ; these are imported from Ireland and are shipped to the West Coast of Africa to be used in caulking the seams of casks, should there be any shrinkage, when the staves are put together. The staves shrink transversely, but not longitudinally, hence the tops and bottoms are always made full. The casks are readily opened by striking up the topmost hoop.

Palm Kernels and Oil.—Palm Kernels are imported in bags. Large quantities reach Liverpool but the bulk of the carrying trade is in German hands, the kernels being shipped to Hamburg. In transactions where Palm Kernels are being dealt with 5 per cent. rebate is allowed for debris. Where, however, any dispute arises during a transaction of the kind, samples are taken from the various bags ; the samples are mixed together and taken to a laboratory. From the mixed samples a few handfuls are taken ; these are carefully gone over, the rubbish picked out by hand and the percentage of the latter determined.

The African Oil Mills Company possess the chief mill in Liverpool, provided with up-to-date machinery for crushing these kernels ; the oil obtained is used for soap-making.

At the time this visit was paid it was noted that several vessels belonging to the Woerman Line, last spoken from Las Palmas, carried an aggregate of 4,450 tons of Kernels and 500 tons of Palm Oil destined for Hamburg. Palm kernels constituted the chief import into Germany from British West Africa in 1905, amounting to £1,918,000 in value, against £2,005,000 in 1904.

Cotton.—At the docks part of a cargo of 11,027 bales of New Orleans Cotton from Wilmington was seen in course of unshipment. The whole cargo was landed in 3½ days. The bales, weighing from

450 to 680 lbs. each, were taken from the hold of the vessel, landed, weighed, marked, and then either put on trollies to be carted away immediately or arranged on the floor of the dock shed.

FRUIT.—Barrels of Apples, each weighing about 1¼ cwt., were seen being landed from a Cunard Liner. The cargo included 27,000 such barrels, shipped from Boston, U.S.A. In a dock warehouse were large quantities of oranges and onions in casks, grapes in small barrels, and raisins and almonds in small boxes, imported from Spain. In addition were noted some carefully packed crates of "Jamaica Selected" oranges, each crate containing 200 to 270 fruits. These crates were held securely together by means of iron hooping.

MISCELLANEOUS PRODUCTS.—In the dock warehouses a great variety of miscellaneous products were to be seen. The following from West Africa were recognised :—Gum Copal, in casks, from the Oil River District; Rubber, in casks, from Free Town, Sierra Leone; large quantities of Maize from Lagos. Maize is a comparatively new import, dating practically from two or three years back; the industry is one of increasing importance. The Maize is imported in sacks of 1¾ cwt. each; on being landed it is usually put into the buyers' sacks, of 240 lbs. to the sack. In addition were seen Lagos Bass or Raffia, esteemed the best variety shipped from the West Coast, in bales of 2 cwt. 1 qr. 16 lbs. each; Monrovian Bass or Piassaba, in loose packages; Palm Kernels from Lagos, in bags of uniform weight, 1 cwt. 1 qr. each; Elephant Berry Coffee from Liberia; Ebony from the Gaboon; Cotton seed, in sacks, from Lagos; Ginger from Sierra Leone; the inner bark of the Baobab, probably for paper-making, in bales held together by hoop-iron; Gum Copal from Sierra Leone; Baa seed (*Bassia* sp. ?) from Grand Bassam; Palm Oil from Bathurst and from St. Paul de Loando, in casks of 15 cwts. each; casks of Palm Oil scrapings from the holds of vessels; Cocoa from the Gold Coast, in bags averaging 1 cwt. 1 qr. each; Decorticated Ground Nuts, perhaps from the Niger; such Ground Nuts are usually shipped to Oporto, Rotterdam or Hamburg. From the Niger were observed the following :—Gum Kino, in cases; Gambia Pods, Unginned Cotton, Kola and Beni Seeds, in sacks; also Shea Butter, in casks weighing 10 cwt. 1 qr. 1 lb. each. Beside these imports were to be seen large quantities of the Rushes (*Scirpus lacustris*) ready for export to the West Coast, to be used in caulking Palm Oil casks.

The following Eastern products were observed :—Rice meal, in sacks of 180 to 200 lbs. each, from Rangoon; large quantities of Manila hemp (*Musa textilis*), in bales of 2½ cwt. each; also the following, all shipped from Singapore :—Rattans, in two sizes; Tanning extract, in packages of matting measuring 2½ ft. by 2 ft. by 8 ins. and weighing about 1 cwt. each; Gambier, in packages like the preceding, each weighing from 1 to 2 cwt.

TIMBERS.—Of the various woods shipped from the West Coast of Africa as Mahogany, those at present most in favour come from Lagos and Benin. From a copy of the "Annual Circular for Mahogany, &c." kindly supplied by Messrs. Edward Chaloner and

Co., Timber Merchants, Liverpool, we learn that the total supply of West African "Mahogany" during 1905 was 16,965,137 ft., shipped from the following ports :—

	Feet.		Logs.
Benin	3,889,809	:	6,488
Axim	2,731,892	:	4,088
Lagos	1,978,060	:	3,269
Grand Bassam ...	1,708,049	:	2,258
Cape Lopez	1,600,441	:	3,470
Sekondi	1,524,151	:	2,842
Assinee	1,279,621	:	1,262
Sapeli	896,772	:	1,109
Gaboon	514,659	:	1,023
Grand Lahou... ...	383,597	:	410
Boutry...	134,654	:	205
Half Assinee	68,932	:	108
Osse	63,239	:	104
Bakana	58,521	:	58
Sassandra	35,682	:	52
Ekoybo	29,540	:	61
Beyin	28,885	:	40
Twin Rivers	23,239	:	42
Various other ports ...	20,394	:	62

It was found on enquiry that the timber formerly imported into this country as 'African Oak' or 'African Teak' and used for ship-building—*Oldfieldia africana* (*Euphorbiaceae*), an extremely heavy, close-grained and durable timber—is at present hardly known in the Liverpool timber-trade and is now seldom if ever imported. The wood at present being imported under the name 'African Oak' is *Lophira alata* (*Ochnaceae*), a hard and heavy timber. There is a growing demand for Australian Blackwood, sometimes known in Tasmania as Lightwood, as a substitute for American Black Walnut, *Juglans nigra* (*Juglandeae*). The Australian timber in question is yielded by *Acacia Melanoxylon* (*Leguminosae*) and is valued in Australia for its hardness and durability ; it is extensively used for cabinet-work, furniture and picture frames. Among the other interesting timbers noted during this visit were Java Teak, *Tectona grandis* (*Verbenaceae*) ; New Zealand Birch ; some fine planks of Austrian Ash ; African Padouk, *Pterocarpus erinaceus* (*Leguminosae*), a timber generally shipped in logs of about two tons in weight, but at present not greatly in demand. American White Oak is being superseded by the timber of an Oak imported from Japan, which is employed for sleepers and for scantlings for the floors of railway wagons. Washiba, a tough and elastic wood of a reddish-brown colour, imported from British Guiana was also noted. This wood is used for making bows, fishing rods, &c., and in this country is in demand for wheel-spokes. Washiba has been long known in commerce in this country, but although efforts have been repeatedly made by Kew to trace the botanical source of the tree which yields the wood, the point has not yet been satisfactorily settled. In recent works the wood has been stated to be derived from *Parinarium guianensis* ? (*Rosaceae*), but this identification is at least doubtful. Specimens of Washiba in the Museum at Kew

are found on comparison to be undistinguishable from specimens in the collection of Poui, from Trinidad. These specimens of Poui have been referred to a species of *Tecoma* (*Bignoniaceae*) and though the particular species which yields the timber is as yet obscure there seems little room for doubt that the wood is that of a species of *Tecoma*. If the tree known in Trinidad as 'Green Poui' should prove to be plentiful, it might be worth while to ascertain whether its wood can be used as a substitute for that of the scarce Washiba of British Guiana.

The following note on Java Teak, one of the timbers noticed above, which appeared in Diplomatic and Consular Report No. 3403 Annual Series, on the Trade of Java for the year 1904 may be usefully reproduced here :—

"The output of Java Teak during the year was much more satisfactory than that of the previous year, being 6,356,000 cubic feet, as against 3,531,600 cubic feet in 1903. The demand for timber has been good, both for export to Europe and to India, while South Africa has taken about 547,000 cubic feet in the form of railway sleepers.

"It would appear that the Java Teak is not so well liked for high class work as the Burma and Siam wood, and the unsuitability of its length militates against its use for shipbuilding purposes."

Economic Collections. In the Museum of Economic Products at the Hartley Laboratories, University of Liverpool, the specimens are arranged according to their uses. As yet this collection is small and many of the products occasionally imported into Liverpool are unrepresented; some even of those that are regularly imported have yet to be illustrated.

The Derby Museum contains a fine collection of Ethnological material from West Africa and Natural History is well represented. So far, however, the only vegetable economic product exhibited is Cotton.

At the Botanic Garden the economic plants of the collection have been as far as possible brought together. Among the plants exhibited are fine specimens of *Eugenia malaccensis*, *Bixa Orellana*, *Garcinia Xanthochymus*; this last and *Coffea arabica* were fruiting freely at the time of the visit. Among the interesting plants that were noted were Cotton, in pod; a *Dioscorea* (*D. bulbifera*) with numerous aerial tubers, *Brosimum Galactodendron*, and others.

XIV.—MISCELLANEOUS NOTES.

Sir Michael Foster, K.C.B.—Owing to the death in London, on the morning of 29th January, 1907, of this distinguished physiologist, we mourn the loss of one who was also deeply versed in garden-craft and as such was a frequent and welcome correspondent of Kew.

Michael Foster was born on March 8, 1836, at Huntingdon, where his father, Michael Foster, F.R.C.S., practised as a surgeon. He was educated at Huntingdon Grammar School, at University College School, and at University College. He graduated M.B. in the University of London in 1859, practised as a surgeon at Huntingdon from 1860 till 1866, became in 1867 Teacher, and in 1869 Professor, of Practical Physiology at University College. In 1869 he was also chosen Fullerian Professor of Physiology at the Royal Institution. In 1870 he was appointed Praelector of Physiology at Trinity College, Cambridge. Having been elected a Fellow of the Royal Society in 1872 he became one of its secretaries in 1881. In 1883 a Professorship of Physiology was founded in the University of Cambridge and Foster was appointed to the chair. In 1899 he was President of the British Association at Dover and was made a K.C.B. In 1900 Sir Michael was elected Member for the University of London, and his professional duties at Cambridge were entrusted to a deputy. He continued to serve as a Secretary of the Royal Society till 1903 when he resigned both this post and his Cambridge chair. In 1906 he again stood for the University of London but was not elected.

As to Sir Michael's merits as an investigator this is not the place to speak. Nor is it appropriate here to say more of his qualities as a teacher than that his interest in his subject was extended to studies in vegetable as well as in animal physiology, and that his strong if quiet energy was given wholly to the advancement of knowledge.

His duties at Cambridge and at Burlington House, arduous though they were, did not deter him from undertaking useful public work. Thus, in 1884, at a critical period in its history, he gave his services to the task of putting the Royal Horticultural Society once more on a firm basis; when the Society entered on happier times, Sir Michael and his friend Sir W. T. Thiselton-Dyer, who had also devoted himself to the same task, retired together from the Council in February, 1889. Sir Michael served on the Royal Commission on Sewage Disposal: acted as Chairman of the Committee on Botanical Work which sat in 1900; and was appointed, in 1901, Chairman of the Committee on Tuberculosis.

At his home at Great Shelford, near Cambridge, Sir Michael made for himself a garden on which he bestowed much care. He was especially devoted to the genus *Iris*, as to which he possessed a knowledge that was as accurate as it was extensive, and that was placed by him freely at the disposal of others.

Auguste François Marie Glaziou.—The *Allgemeine Botanische Zeitschrift* for December, 1906, announces the death, in March last, of this veteran and enthusiastic botanical collector, at Bouscat, near Bordeaux, without any further particulars. Other German and English journals have repeated the announcement, but having failed to find a record of the event in any of the French papers we applied to Mr. Jules Poisson, of the Natural History Museum of Paris, who replied that it was indeed true

that his old friend had died as stated. Glaziou had no relatives, except a married daughter, who was at the time in Cochinchina, and no "billet de faire part" was issued.

A. Glaziou, as he invariably signed himself, a native of Brittany, was born, according to Mr. Poisson, in 1828. He qualified in Paris as a Civil Engineer, and studied Botany at the same time under Brongniart and Decaisne. In early life he went to Brazil, where he spent 35 years. During his long residence in Brazil he was actively engaged in the botanical investigation of the country and made enormous collections of dried plants, which he presented to the principal botanical establishments of Europe. In the introductory volume of the "Flora Brasiliensis" (1906) Dr. I. Urban gives some particulars (p. 27) of Glaziou's collections and journeys. Glaziou himself, "Bulletin de la Société Botanique de France," vol. lii., 1905, "Memoires," n. 3, in an Introduction to a "Liste des Plantes du Brésil Central recueillies en 1861–1895," has published a very condensed history of his botanical explorations in the States of Rio de Janeiro, São Paulo, Esperito Santo, Minas Geraes and Goyaz, from which it appears that he defrayed the whole of the expenses out of the limited means of a public functionary. Glaziou, it may be explained, was first Director of the Passeio Publico—Public Promenade—of the city of Rio, and subsequently Director of the Public Gardens and Forests of the State, and he mentions that the Ministers, both of the Empire and Republic, gave him full liberty and facilities for carrying out his botanical work. Altogether he collected specimens of upwards of 12,000 species, numbered 1–22,770, with about a thousand of the numbers 'bissed.' The specimens are excellent, and 200,000 is a low estimate for the total number. The collection included hundreds of previously undescribed species and numerous new genera. Of each of the first 4,000 numbers only two or three specimens were collected, but above that number a dozen or more were collected, where possible. From the beginning the first set went to the Editor, Dr. von Martius, of the "Flora Brasiliensis," and after his death to Berlin, for the continuation of this great work, under Dr. Eichler and Dr. Urban successively. The result from this arrangement is that Nos. 1–3266 are in Martius's herbarium, now at Brussels, and Nos. 3267–22770 are in the Berlin herbarium. Kew possesses an almost complete set of the numbers above about 4,000, and Glaziou, at a later date, went through his own set and divided the specimens, where it was practicable, with Kew. With regard to Glaziou's list, the title of which is given above, it is to be hoped that he had finished it and that the remaining and greater part will be duly published. This is of the greatest importance to the possessors of his plants, because they were distributed under their numbers, but without localities and without his field-notes. The list is systematically arranged according to the sequence of Bentham and Hooker's "Genera Plantarum," and it has appeared to the end of the *Crassulaceae*; the first part in November, 1905; the second part in July, 1906, after the author's decease. The species are separately numbered under each order, so that it is easy to see the extent of Glaziou's contributions in material to the "Flora Brasiliensis." Thus the *Violaceae* are represented by 34 species; *Polygalaceae* by 69;

Vochysiaceae, almost peculiar to Brazil, by 59 ; *Malpighiaceae* by 166 ; *Sapindaceae* by 120 ; and *Leguminosae* by 827 species.

Glaziou was the recipient of many distinctions, notably the Knighthood of the Order of the Rose of Brazil, and the Doctorate of Philosophy of the German Leopoldinean Academy, but he apparently set little store by them, as he did not use any of the titles in the paper cited above.

W. B. H.

ERNEST PFITZER.—Another of the regular and appreciative visitors to the Herbarium has passed away. Geheim Hofrath Dr. E. Pfitzer, Professor of Botany at the University of Heidelberg, and Director of the Botanic Garden there, died suddenly from apoplexy, on Dec. 3rd last, at the age of sixty. He attended the Conference on Hybridisation at the Royal Horticultural Society last summer and read a paper, and he also did a little work at Kew ; but for the first time, as he said, he took a rest in England. He went to the Isle of Wight and was so charmed with the place that he prolonged his stay in the island. Dr. Pfitzer was of a most cheerful disposition, and he always had the appearance of enjoying what he was doing, whether it was work or recreation. Engaging in manner and bright in conversation, he was always a very welcome visitor. He was author of a number of important treatises on the morphology and classification of orchids, in which he dwelt more especially on the importance of the vegetative characters. His "Grundzüge einer vergleichenden Morphologie der Orchideen," was the forerunner, and it is an admirable and most instructive book. Much of his work was done at Kew, and he was never tired of expressing his gratitude for the facilities he enjoyed. His widow and daughter have our deep sympathy in their sudden bereavement.

W. B. H.

J. N. WINTER.—The death of Mr. John Newnham Winter, M.R.C.S., L.S.A., which occurred at his residence at Kew, on January 18th, 1907, after a very brief illness, deprives Kew of another warm and generous friend. Mr. Winter, who was in his 76th year, had been for years a collector and grower of filmy ferns and in later life also of hardy alpine plants. He was for many years a successful and highly respected medical practitioner in Brighton. In early life he was fond of travel, his journeys extending as far as Palestine, but as his practice grew he was unable to go far afield and contented himself by bringing together a collection of ferns grown in glass-roofed caves under the yard attached to his residence at Brighton, that was remarkable alike for the extraordinary number of rare species which it contained and for the excellence of their cultivation.

Dr. Winter studied botany under Dr. Lindley at the Chelsea Botanic Garden and acquired a critical knowledge of plants which never was allowed to rust. He was his own gardener, holding that the true charm of plants lay in handling and tending them with the solicitude of a parent. This led to his devoting long

morning hours to his treasures and to his acquiring a wholly exceptional knowledge of their growth and requirements. This was particularly the case with regard to filmy ferns, which he employed collectors to procure for him from all parts of the world, though the bulk of his collection was obtained from New Zealand, the West Indies, and the Himalayas. His fondness for this group of plants led him to pay frequent visits to Kew for the purpose of comparing his various acquisitions with specimens in the living collection and in the herbarium.

When he retired from practice at the age of 70, Dr. Winter migrated from Brighton to Kew with the especial object of living in the vicinity of the Kew collection of filmy ferns and of enjoying the gardens. His kindly generous nature endeared him to all with whom he came in contact and he was a liberal donor of rare filmy ferns to the Kew collection ; to this branch of the establishment he occupied for years much the position occupied by the late Mr. G. C. Churchill with regard to the alpine collection.

Dr. Winter brought with him to Kew a portion of his collection of plants and grew them in a greenhouse against his residence in Lichfield Road. Here, too, he constructed an ingenious garden for alpine plants, in preparing which he made use of many tons of sandstone rock, where he grew many species with much success.

The Collection of Loniceras at Kew.—Except for a few of the climbing honeysuckles, the genus *Lonicera* is comparatively neglected in gardens, yet in regard to number of species it is one of the most important among cultivated hardy shrubs. The Kew collection comprises more than 60 species, besides a large number of hybrids and varieties. Mr. Rehder, in his recent synopsis of the genus (*Fourteenth Annual Report of the Missouri Botanical Garden*) enumerates 155 species. Many of the Loniceras, especially those belonging to the climbing (or Caprifolium) section of the genus, are amongst the most beautiful of hardy shrubs. In the Xylosteum section, which includes the species of bushy habit, there are also many attractive ones, but to enable them to make their most effective display they require abundant space and generous treatment at the root. Hitherto it cannot be said that the collection of Loniceras at Kew has had either. The plants have been somewhat cramped up in one of the narrow rectangular beds near the Himalayan House, where the space is strictly limited and where severe pruning was necessary to keep them to a convenient size. With the exception of a few species only represented by small plants, the entire collection has this winter been transplanted to the lawn north of King William's Temple ($\frac{8}{H}$ on the official Key-Plan of the Gardens), where there is plenty of space for their development. In view of this and the fact that a supply of good loam has been given to each plant, it is hoped that the beauty of many species, hitherto unrevealed, may be shown in their new quarters.

W. J. B.

Bird's Nest from Trinidad.—A bottle-shaped bird's nest was presented to the Museum by Mr. J. H. Hart, in July, 1900. A note regarding it appeared in the Proceedings of the Linnean Society for 1900–01, p. 3, where it was stated that it was believed to be composed entirely of the seeds of a species of *Tillandsia* (*Bromeliaceae*). It has, however, since been found to consist of the seeds of *Catopsis nutans*, Gris., belonging to the same order. These nests are solitary, but there may be two or three on the same tree.

The nest was sent as an interesting illustration of a mode of seed dispersal. It was attached to the underside of a branch of a large tree, but the donor was unable to supply the name of the bird to which it belonged, though he had assiduously watched for it. The nest measures a foot in length, and is between four and five inches across at its widest part.

During the summer of last year, Mr. Hart wrote that after continuous effort for over five years he had at last secured a specimen of the bird, which was caught before daybreak by means of a net attached to the end of a pole 30 feet long, so as to reach the nest, which was situated on the underside of a large branch of a Silk Cotton Tree *Eriodendron anfractuosum* (*Malvaceae*). Its companion escaped.

Mr. Hart forwarded the bird for determination. It was submitted to Dr. Bowdler Sharpe of the British Museum (Natural History), who has kindly furnished the name, *Paenyptila cayanensis*, Gmelin, the Little Collared Swift. The nest may be seen in Case 9, Museum No. II.

J. M. H.

Mrs. Jameson's herbarium.—In the record (*Kew Bulletin*, 1906, p. 131) of donations to the Herbarium, it is mentioned that Miss E. M. Piesse presented a collection of plants made in Cape Colony by Mrs. Hugh Jameson. The herbarium comprised about 500 species of plants from the Cape Peninsula; 20 species from the Falkland Islands, and a book of specimens of British Plants. Although the Cape plants are from a district that has been very thoroughly explored, and were probably all previously known, the specimens are valuable because they are all very carefully localized. Especially interesting among the British plants is a specimen of *Gentiana Pneumonanthe*, labelled "Fulham, 1840." Hounslow Heath is the only authenticated locality for this *Gentiana* in Middlesex recorded in Trimen and Dyer's "Flora," and the plant was then (1869) supposed to be extinct in the county. Mrs. Jameson was the wife of Hugh Jameson, F.R.C.S., Deputy Inspector, R.N., who served with distinction on various foreign and home stations. He was principal surgeon of the frigate "Castor" at the bombardment of St. Jean d'Acre, and as this ship bore the brunt of the enemy's fire, he had unusual opportunities of exercising his operative skill. Subsequently, about 1841, he served in the Winchester flagship at the Cape of Good Hope, and it was then that Mrs. Jameson made the collection.

W. B. H.

A memorial of the late Charles Baron Clarke, F. R. S.—Mr James Ramsay Drummond, who is engaged at the Herbarium on a Flora of the Punjab, has presented the establishment with one of the compound microscopes which belonged to the late Mr. C. B. Clarke. It is not the very large one, familiar to everybody, which Mr. Clarke used at the Herbarium; but a smaller, practical one which he carried about with him when travelling abroad or visiting other establishments in this country. The donor has performed a gracious act which is highly appreciated by the staff and other frequenters of the Herbarium. Attached to the box is a small plate bearing the inscription :—"In Recollection of Charles Baron Clarke, F. R. S., Ex-President of the Linnean Society. From J. R. D., Decr., 1906."

Botanical Magazine for January.—The plants figured are: *Lomatia ferruginea*, R. Br., *Aconitum gymnandrum*, Maxim., *Viburnum Carlesii*, Hemsl., *Tricuspidaria dependens*, Ruiz et Pav., and *Renanthera annamensis*, Rolfe, all of which are in cultivation at Kew. *Lomatia ferruginea* is a handsome plant with foliage not unlike that of *Grevillea robusta*, A. Cunn., and loose racemes of showy yellow and crimson flowers. It is a native of Southern Chili and Patagonia, and is hardy in the British Islands, at least in the warmer parts. The material figured was from a fine specimen growing in the garden of Earl Annesley, Castlewellan, Co. Down, Ireland. *Aconitum gymnandrum* is remarkable in having long-clawed lateral sepals. It is an annual, a native of Tibet and Western China, and was raised at Kew from seed sent by the Director of the Botanical Survey of India. This was collected at Gyantse during the Lhassa Expedition of 1904. The *Viburnum* is a dwarf shrub, with ovate-rotundate or almost round, toothed leaves, and rather large terminal cymes of pink and white flowers. The Kew plant was obtained from Messrs. L. Boehmer and Co., of Yokohama, in 1902. It is a native of Corea, and is hardy in this country. *Tricuspidaria dependens* is an attractive species, for the introduction of which English horticulture is indebted to Mr. H. J. Elwes, F.R.S. It is of rapid growth, and is readily propagated by cuttings. The synonymy of this and of another species, *T. lanceolata*, which has been long in cultivation, and is figured in the *Magazine*, t. 7,160, under the name *T. dependens*, was greatly confused until it was corrected in the *Gardeners' Chronicle*, 1905, vol. ii., by Mr. Watson; a fuller note on the synonymy and on the characters of the two plants has since appeared in the *Kew Bulletin* (1907, pp. 10-16). Regarding this species, Professor Sargent, Arnold Arboretum, writes, with reference to the account given in the *Magazine*: "Justice is hardly done to *Tricuspidaria dependens*, which is one of the largest of Chilian trees. At a place called Hospital, 30 or 40 miles south of Santiago, I saw a group of these trees that must have been 70 or 80 feet high. The largest of them, at any rate, had a trunk diameter of five feet and ten inches." The greatest heights previously recorded for *T. dependens* have been "30 feet," by Miers; "20–25 feet or even more," by Gay; and "6–8 metres," by Reiche. The Kew plant, raised from seeds brought home by Mr. Elwes in 1902, has already reached a height of 10 feet. *Renanthera annamensis* is

a new member of this genus, so like *R. Imschootiana* in habit that, until it bloomed, and the marked differences in the size and colour of the flowers proved it to be distinct, it was taken for that species. It was discovered in Annam, by Mr. W. Micholitz, a collector for Messrs. Sander and Sons. It flowered at Kew in May, 1906, under tropical treatment.

Botanic Garden, Hobart, Tasmania.—We are informed that Mr. F. Abbott, for many years Superintendent of the Hobart Botanic Garden, died some time ago, and has been succeeded by Mr Alexander Morton who holds the appointment conjointly with the Curatorship of the Natural History Museum at Hobart.

Specimens for use in Elementary Schools.—A limited number of sets of specimens of forty species of common trees and shrubs, each represented by a summer shoot, a winter shoot, flowers and, where possible, fruits, mounted on stiff cardboard, are available for use in Elementary Schools. Application for a set may be made to the Director, Royal Botanic Gardens, Kew. The price per set is £1. The specimens represent the following:—Acacia, Alder, Almond, Apple, Apricot, Ash, Barberry, Beech, Birch, Black Currant, Chestnut, Dog Rose, Elder, Elm, Gean, Hawthorn, Holly, Hornbeam, Horse Chestnut, Ivy, Laburnum, Larch, Lilac, Lime, Maple, Oak, Peach, Pear, Plane, Red Currant, Scotch Pine, Sessile Oak, Spindle Tree, Sweet Briar, Sycamore, Turkey Oak, Walnut, White Willow, Wych Elm, Yew.